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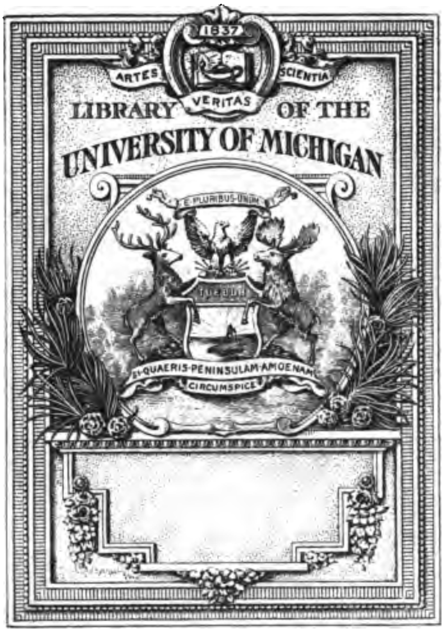
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THE EPIDEMIC
OF 1878
AND
ITS HOMŒOPATHIC TREATMENT;

A GENERAL HISTORY OF THE ORIGIN, PROGRESS,
AND END OF THE PLAGUE IN THE
MISSISSIPPI VALLEY.

BY

ERNEST HARDENSTEIN,

VICKSBURG, MISS.

TO THIS IS ADDED

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DEDICATION.

To the Disciples of Hahnnemann, the Founder of the New School of Medicine, this work is respectfully inscribed.

THE AUTHOR.

NEW ORLEANS.

In commencing upon the subject of yellow fever, we take New Orleans as the notable starting point. This last epidemic, at any rate, is known to have started in New Orleans, *some time* in July, 1878. The word sometime is the great rock which both schools of medicine are tugging at, one to locate it at the wharf where the Emily B. Souder lay, and the other to place it at the threshold of the great city of New Orleans, as the originator of the plague. As for me, I will present both sides of the question. The standpoint on the Souder side may best be given by re-printing the report of Dr. Samuel Choppin, (allopath), President Board of Health of Louisiana:

REPORT OF SAMUEL CHOPPIN, M. D., PRESIDENT BOARD OF HEALTH.

Office Board of Health,
New Orleans, January 1, 1879.

To His Excellency, Francis T. Nicholls, Governor of the State of Louisiana:

Sir—As executive officer of the Board of Health, I have the honor to submit the following report for 1878. The experiences of the calamitous visitation of yellow fever, through which we have just passed, impress a lesson of admonition to prepare for a better resistance on the next approach of our unseen foe; and we scarcely need the sure conviction that the great Southwest looks anxiously to us, who occupy the advanced post of danger, to guard well our defensive works.

It would be well here to give the early history of the recent outbreak, and what we regard as the most probable explanation of its occurrence.

On the 22d of May the sanitary condition of New Orleans was as good as it generally is at that season of the year. Malarial fevers were not more prevalent than usual, and there was not a single case of yellow fever in New Orleans. On the morning of that day the steamship Emily B. Souder arrived, and was moored at the foot of Calliope street.

The first cases of yellow fever at New Orleans in 1878 undoubtedly were two of the officers of the above steamship—namely, Clark, the purser, and Elliott, one of the engineers. Clark was ill when the vessel reached quarantine, but managed to pass inspection as suffering merely from neuralgia. Quite lately it has transpired, through the inquiries of the Yellow Fever Commission, that he boasted, after arrival at New Orleans, that he had "beaten the quarantine doctor." Be that as it may, he went ashore sick on the morning of May 23d, and two days after he died, with symptoms which belong unmistakably to yellow fever, at a house on Claiborne street, near Conti. He was attended both aboard and ashore by a physician long resident in this city, and quite familiar with yellow fever. An investigation of the case at the house where he died showed that the treatment was more suitable to yellow fever than to any other disease, still a burial certificate was given of death by a malarial fever. This was not brought to the notice of the Board of Health by any direct communication, official or otherwise, but from information received through rumor. It is a significant fact in connection with Clark's case, that he died at 2 o'clock A. M., and was buried at 10 A. M., the same day. No public announcement of his death was made until the following Sunday.

We here append the report of the investigation of Clark's case by Dr. Landry, Sanitary Inspector:

Office of Sanitary Inspector, Second District,
New Orleans, June 4, 1878.

Samuel Choppin, M. D., President Board of Health:

Dear Sir—I have the honor to hereby transmit to you all the information I have been able to gather relative to the illness and death of John E. Clark, Esq., late purser of the steamship E. B. Souder.

Clark was a man of strong complexion, of about forty-eight years of age, and who had long been employed on vessels plying in the Gulf of Mexico. His ship, the E. B. Souder, reached here on Wednesday, May 22, he staying thereon until the following morning (the 23d), when, at 9 a. m., having been unwell since the day previous, he left the ship to go to house No. 65 on Claiborne street, occupied by a colored family, where he immediately went to bed. At that time he was suffering from an indescribable state of uneasiness and restlessness, coupled with intolerable headache and pain in the loins. Clark reached the house in company with Dr. Drew, who, it seems, was not his regular physician. Dr. Drew, the inmates of the house state, prescribed something to be taken by drops, if at 12 o'clock Clark's regular physician had not called. At 12 o'clock, the regular physician not appearing, the prescription left by Dr. Drew was administered, without any noticeable effect. Dr. Drew detected fever, stating, however, that it was not dangerous, and left, coming again only the next day (Friday, the 24th,) at 10 a. m. Two or three hours after reaching the house he was never to leave alive—that is, in the forenoon of Thursday, the 23d—Clark urinated, emitting a small quantity of *greenish* liquid, and from that time until death never again urinated.

During the whole of Thursday, the 23d, he was constantly in a state of unbearable agitation and suffering which nothing could relieve. The women who nursed him tried their utmost to procure him some rest, but in vain; they tried, of course without result, poultices of hops saturated with vinegar, placed on the hypogastric region, to facilitate urinating. Besides a constant headache with pains in the loins, the patient suffered incessantly from a weight upon his chest and stomach, accompanied with nausea and difficulty in breathing, but no vomiting. Nothing could relieve him of this sensation.

During the whole of Thursday, the 23d, and the forenoon of the 24th, the patient suffered tortures, resulting from an intolerable sensation of intense heat. There were some slight remissions, but none sufficient, however, to bring on perspiration. The facies was red,, but without traces of jaundice either on the skin or sclerotic. Foot baths and mustard plasters, moved from time to time over the whole body, were tried.

No information relative to the frequency or nature of the pulse.

On Friday, the 24th, Dr. Drew called at about 10 a. m., prescribing a blister, which he had applied to the pit of the stomach. At 11 a. m., the patient is without fever. During the day he takes some lemonade, but throws it up without effort, however. No traces of black vomit. During the afternoon the patient is better, and feels quieter. Dr. Drew had prescribed iced champagne, to which the nurse had objected as being inopportune and even dangerous; the Doctor insisting, Clark took a little, which he kept. Later on, during the afternoon of Friday, Clark, still feeling better, asked for food. He *was given some chicken broth, which he relished, declaring it excellent.* Nevertheless he only took a few spoonfuls of it, not seeming to care for any more.

Notwithstanding the apparent improvement of Friday morning, the patient becomes again restless towards evening; the evening itself is unfavorable; the night slightly better, with short spells of sleep. But at 1 a. m., Saturday, Clark is taken with a first convulsion, so violent that he is almost thrown out of bed; then comes a period of relative calm, with delirium; then a second convulsion, and again calm and delirium; then a third convulsion, during which he passes away, at about half-past 2 o'clock a. m. Immediately after death the body began to assume the typical icteric tinge.

The nature, but more especially the *ensemble* of symptoms, the short duration of the illness, the suppression of the urine, the fancy for food (always a fatal sign) shortly preceding the end, death coming after cessation of all fever, the icteric tinge after death—all added to the *commemorative circumstances*, do not admit of a doubt, in my mind, that Clark died of yellow fever.

In conformity with your prescriptions, all the streets between and including Claiborne, Roman, Customhouse and St. Louis streets have been sprinkled with carbolic acid diluted with water, the sidewalks, yards and gutters of the streets receiving the same treatment. The privies of every house within the above described limits were all disinfected, the odor of carbolic acid being still quite strong in that locality up to 6 P. M., yesterday, the 3d instant.

Respectfully, A. LANDRY, M. D.,
Sanitary Inspector Second District.

Elliott sickened after his arrival, and was attended by a private physician at his boarding-house, corner Front and Girod streets, until the evening before his death, without apparently a suspicion on the part of any one that he had yellow fever. Late in the evening of May 29th he was removed to Hotel Dieu, where he died within a few hours. A careful *post mortem* examination was made by two competent physicans, and the body was subsequently inspected by myself. No one of us three doubted the nature of the disease.

Here it is proper to observe that the only case of yellow fever in New Orleans in 1877 came through the quarantine by practicing deception on the resident physician. This man, a passenger on a British steamer, took passage at Havana, and sickened before arrival at quarantine. However, he was able to go on deck, and passed inspection while sitting with a newspaper in his hand. Fortunately, on reaching this city he fell into the hands of a physician who promptly reported his case as yellow fever to the Board of Health, and vigorous means were at once adopted to arrest the infection. No infection had survived the rigorous winter of 1876–77; no further harm resulted from the single case of 1877, and it is fair to presume that no trace of the fever existed here previous to May 22d.

In 1878, the cases from the Emily B. Souder were unknown to the health authorities for a full week after the arrival of the ship at her wharf, at the head of Calliope street. No further time was lost in making use of the usual means of disinfection. around the intersections of Front and Girod streets, in and around Hotel Dieu, where Elliott died, and in and around the house where Clark died, on Claiborne street. No more cases followed within the period of their apprehended occurrence, and it was supposed the danger was past. About the middle of July some cases of a strongly suspicious character came to light on Constance street, near its intersection with Terpsichore, and in a few days all doubt was removed of their true nature. About the 7th of July, a young man, named Cohn, came to the Touro Infirmary from Gasquet street, between Villere and Marais, presenting strong appearances of yellow fever, but he recovered before attention was drawn to Constance street, and his case was considered questionable. Within a few days, cases were found near the corner of Front and Girod, where Elliott had sickened; on Bienville, near where Clark had died on Claiborne street; and a case on Robertson street, near the home of Cohn, who had been at the Touro Infirmary, not much more than a quarter of a mile from where Clark died, and a still less distance from Hotel Dieu, where Elliott died.

The line of infection was tolerably clear, though long latent, from Clark to Cohn and subsequently to the cases on Bienville and Robertson streets; also from Elliott, sick at his boarding-house, to the subsequent outbreak at the corner of Front and Girod; but the outbreak on Constance street was so far from the wharf of the Souder (fully half a mile), and so long after her arrival (more than six weeks), that it was long considered out of question to establish a connection between them.

Recent investigation shows that some of the earliest cases on Constance street, 122, occurred in the family of a Mr. Caven, who is engineer of the tugboat Charlie Wood. This boat lay at the same wharf occupied by the Souder, immediately after the departure of the latter for Havana, as stated by Caven himself to me at the time of his illness.

I desire here to explain the discrepancy between the joint statement of the Caven family, since made to Dr. Murray, and the one made by Mr. Caven to me while he was sick in July. In the last statement it was made to appear that the tugboat Charlie Wood, of which he was engineer, did not come near the Souder, nor lie at the wharf previously occupied by the latter vessel; while he had previously declared to me, when the matter was more fresh in his mind, that the Charlie Wood took the place of the Souder, at the head of Calliope street, on her sailing back to Havana, on June 1st. It should be observed that the last statement of Caven was made in the presence of Captain Wood, of the tug Charlie Wood, (as told me by Dr. Murray, who took it down), and that he started to report the Wood lay at the same wharf just left by the Souder; but he was checked by Captain Wood, and corrected so as to make a different statement.

The explanation is, that the owners and master of the tug-boat were naturally unwilling to have their vessel involved in any responsibility, whether apparent or real, for the introduction of yellow fever last year, and both they and those interested in the Souder would have an interest in disproving any connection between the two vessels.

Mrs. Wasson, Caven's mother-in-law, sickened on the 30th of June with symptoms answering closely to those observed in yellow fever, and two weeks later other members of the family were known to have yellow fever. About the same time several children in a neighboring family named Bolton, 116 Constance street, developed the same disease; and it has been ascertained that a colored laundress, Emma Watts, living in the yard of the Bolton family, had done washing for Mrs. Wasson in the Caven yard and hung up the clothes to dry in the yard of the Bolton family. It has been ascertained from Mr. Bolton that his brother, John Bolton, lately from Kentucky, died July 16th under the following circumstances: He had been ill for a week, but did not finally take to bed till the morning before his death, and was not attended by a physician. The coroner ascribed his death to congestion of the brain, though it was observed by Dr. Axson, when first called to visit the children, that his body was much jaundiced, as is usually the case with a yellow fever corpse. It has also been ascertained that Bolton was waited on, during his illness, by the same woman, Emma Watts, who had washed clothes in the yard of the Caven family a few days previously. There is therefore a probability that John Bolton was a walking case of yellow fever, though this was not suspected until after the infection was introduced to the Bolton premises from the Caven premises through instrumentality of the colored laundress, Emma Watts. It is significant also that a man named Brady Martin sickened July 14th at the corner of Bienville and Villere streets, where he died July 21st under care of Dr. Roudanez, a physician familiar with yellow fever. This man was seen by myself the day before his death, and I quite agreed with Dr. Roudanez in his diagnosis of yellow fever in this case. It is to be noted that Martin's residence is less than three squares from the house where Clark, the purser of the Emily B. Souder, had died May 25th.

On July 22d, a man died on Robertson street, between Gasquet and Common, after a short attack of yellow fever. This man's residence was about two squares from that of Cohn, before mentioned, who sickened July 8th, and recovered at the Touro Infirmary, and not more than six squares from Hotel Dieu, where Elliott died on the 30th of May.

About the same time occurred several cases near Constance street, alleged on lay testimony to have been yellow fever; for instance, a child of four years old at No. 385 Magazine, said to have sickened June 21st; a lady at 175 Annunciation street, taken sick July 2d or 3d, besides some others alleged on rather vague testimony to have fallen sick still earlier and at localities more remote from the intersection of Constance and Terpsichore streets. The objection naturally arises that the distance was too great from the intersection of Front and Girod streets, and the interval of time too long from Elliott's case to those on Constance street, for a chain of connection to be established between them. It must be granted that we should naturally expect to find intervening cases both in space and time; but we are here confronted by no greater mysteries than we find in other infectious diseases.

Outbreaks of scarlet fever take place more unexpectedly and unaccountably than those of yellow fever, yet no scientific physician attributes these to spontaneous origin nor to local causes. The same disease attacks one or two children in a family and spares the others; it seizes individuals at one time after having passed by them repeatedly. It is sometimes sporadic and mild in visitations; at other times epidemic and malignant. The same is true, though in a smaller degree, of other infectious diseases. The germ hypothesis in relation to yellow fever will serve to throw light on some of its devious movements and strange behavior. Grant that a certain number of the germs were reproduced, either inside or outside the human body; that they multiply in rapid geometrical ratio by repeated generations at short intervals; that a new generation brought to life in hot weather is not only vastly more numerous, but more energetic individually than its predecessors; that these germs are capable both of spontaneous locomotion along the ground and other surfaces, and of transportation in the clothing of persons. Grant these conditions, which are quite in harmony with the known behavior of animalcular beings, and the difficulty of missing links in the chain of evidence is reduced to mere caviling. Add to this, the facts that no germs existed from the previous year, to survive the winter of 1877-78, and that there is no suspicion of the introduction of yellow fever this year by other means than that of the Souder; and we are reduced to the necessity of fastening the guilt upon that particular vessel, unless we adopt the theory of the spontaneous reproduction of the pestilence from local causes.

The nature of these causes no one can explain, even to his own satisfaction; nor why they should exist one year rather than another, or should prevail along the coasts of the Gulf of Mexico, rather than the shores of the Indian Ocean. The truth is, any other theory than the germ theory is speedily lost in inexplicable mystery.

"As to the germ theory itself," writes Dr. Wm. Budd, "that is a matter on which I have long since made up my mind. From the day when I first began to think of these subjects, I had never a doubt that the specific cause of contagious fevers must be living organisms. Once established in the body, this evil form of life, if you will allow me to call it so, must run its course.

"Medicine as yet is powerless to arrest its progress, and the great point to be arrived at, is to prevent its access to the human body, on the sound doctrine of what we can't cure we *must prevent.*"

We append here the special report of Drs. Schlater and Watkins, giving particulars in the case of Thomas Elliott, late engineer of the Emily B. Souder:

"Thomas Elliott, white, a native of Ireland, by occupation an engineer, aged 38 years, reached New Orleans on the steamship Emily B. Souder May 22d, 1878. The steamship Emily B. Souder, on which Elliott was engineer, plied between this port and Havana. Her last round trip up to May 22d was as follows: She left New Orleans May 11th, reached Key West May 14th, and Havana May 15th, left Havana May 18th, reached Key West May 19th, arrived at Quarantine Station May 21st with a clean bill of health; was detained only long enough for fumigation, and reached the wharf at New Orleans May 22d, 1878.

"While at Havana the captain of the Souder was the only one from the ship permitted to go ashore. One case of sickness occurred on board the steamship Souder on her return trip, and was diagnosticated 'Malarial Fever.' Elliott, on reaching New Orleans, was in good health, and for two days worked unloading the ship. On the evening of the the 25th he was taken sick and went to his boarding house on the corner of Front and Girod streets. Dr. F. Loeber saw him on the 26th, 27th and 28th. On the evening of the 29th he was removed to Hotel Dieu. He was there seen by the house physician, Dr. P. C. Boyer, who found him in a dying condition. Death occurred early on the morning of the 30th. Hearing that a case of 'fever' had been admitted to Hotel Dieu from the steamship Emily B. Souder, we visited that institution about 10 A. M., May 30th, and found Elliott dead. Through the courtesy of Dr. Boyer we were permitted to inspect the body and make the *post-mortem* examination.

"AUTOPSY.—Six hours after death, body warm, skin and conjunctivæ of a bright canary color, rigor mortis extreme, cadaveric hypostasis well marked, stomach congested, distended with gas and contained about six ounces of semi-fluid, dark, grumous matter. The mucous membrane of the stomach was congested and softened, very easily removed. The fluid contents were examined microscopically and showed the presence of blood corpuscles. Small intestines congested; contents not examined. Liver of the 'Café au lait' color, and gave the appearance of fatty degeneration.

"Gall bladder contained a drachm of bile. Spleen small and firm.

"Kidneys congested, and when opened gave unmistakable evidences of recent hemorrhage of their pelves. The bladder contained four ounces of dark colored urine, highly albuminous.

"Respectfully submitted,
"M. EDWIN SCHLATER, M. D.,
"Sanitary Inspector, First District.
"W. H. WATKINS, M. D.,
"Sanitary Inspector, Seventh District.

"*Saml. Choppin, M. D., President Board of Health.*"

Statement of Drs. Saml. Choppin and S. S Herrick:—"In regard to the case of Elliott, late engineer of the steamship Emily B. Souder, we have to say: Notice having been received at the office of the Board of Health that the above named individual had died at the Hotel Dieu under circumstances justifying the suspicion of yellow fever as cause of death, we repaired to that hospital about 12 M., May 30th, to investigate the case. On our arrival we found the body in the dead-house, where a *post-mortem* examination had already been made. The skin presented a deeply jaundiced hue. The stomach, which had been opened, showed its mucous surface greatly reddened and softened, with appearances of dark, grumous fluid contents. The kidneys had the appearance of severe congestion. The liver was of a light yellowish hue. These are all the usual appearances observed in the examination of a person dead of yellow fever, and we had no doubt that the man had been the subject of this disease.

"SAML. CHOPPIN, M. D.,
"President Board of Health.
"S. S. HERRICK, M. D.

"New Orleans, Nov. 2, 1878."

Further on in the Report of the Board of Health we find the following, taken from the report of P. S. Carrington, M. D., Resident Physician, Mississippi Quarantine Station:

"The 22d day of this month dates the arrival of the steamship Emily B. Souder, three and a half days from Havana, via Key West, with 29 crew and 9 passengers. This vessel acquired a recent notoriety through an event which gained something more than ordinary prominence in the history of this epidemic, and therefore demands more than a transient notice. On my boarding this steamer, Captain Foote met me at the gangway, and promptly reported one of his crew as suffering with fever, and conducted me directly to the presence of the man. Just here it is proper to state that in passing Purser John G. Clark, who was standing on deck, my attention was attracted by an unusual expression of countenance, which seemed to indicate displeasure, and which was afterwards sufficiently explained.

"An examination of James Fordyce disclosed the existence of fever, but there was no symptom to indicate more than an ordinary malarial attack. After suggesting that the man be placed in a position favorable to the subsidence of his fever, I returned on shore and reported the case to yourself, as President of the Board of Health. My assistant, Dr. Patton, was requested to go on board the Souder, with instructions to superintend the fumigation of the vessel, to examine the passengers, and the remainder of the crew, and to watch the sick man. In reply to my telegram you instructed me to 'detain the Souder until satisfied of the nature of the case.' At this time there were cases of yellow fever in the hospital from the steamship Borussia. After visiting these patients, and being a short while on shore, I boarded the Borussia, then undergoing fumigation, and remained until the sulphur pots were taken out. Upon my return to the Souder, after an expiration of some hours, I found Fordyce with a continuance of his fever; yet, apart from the fact that the man had *fever*, and had visited Havana, there was not a symptom or circumstance to indicate yellow fever. But prudence suggested his removal, and he was taken on shore, placed in the hospital, and the room he had occupied upon the ship, after his departure, was fumigated. This man entered the hospital on the 22d of May, was treated for malarial fever, had one paroxysm, and at the proper time, with the generous administration of quinine, having no other, was discharged on the 24th.

"The Souder had now been disinfected and subjected to a prolonged fumigation, the passengers and remainder of the crew had been examined by my assistant, and pronounced well, the vessel had been detained 'until satisfied of the nature of the case,' whereupon a release was granted, and it proceeded to New Orleans. Dr. Patton subsequently informed me that Mr. Clark stated to him that he had been suffering from facial neuralgia, which was regarded as a sufficient explanation of the peculiar expression of countenance I remembered to have observed. Dr. Patton, moreover, affirms that he had not a particle of fever at the time of his examination."

Clark, the first case, was taken on the 22d of May and died the 25th. The record does not show when Elliott was taken, but he died on the 30th. During the whole of the following month (June) we hear of no yellow fever, except Mrs. Wasson, mother-in-law of a Mr. Caven, engineer on the tugboat Charlie Wood. Here is an interim of thirty days from Elliott's death to the "sickening of Mrs. Wasson, with symptoms answering closely to those observed in yellow fever." "About the same time," says my authority, "several children in a neighboring family named Bolton developed the same disease (i. e. symptoms answering closely to those observed in yellow fever), and it has been ascertained a colored laundress, Emma Watts, living in the yard of the Bolton family, had done washing for Mrs. Wasson in the Caven yard, and hung up the clothes to dry in the yard of the Bolton family."

Now, Mr. John Bolton's death from yellow fever is ascribed to this laundress waiting on him. But he died on the 16th of July, and had been ill, not confined to his bed, for one week, which would date his attack on July 9th. Now the Bolton children had "developed the same disease about June 30," and, evidently, according to an analysis of the report, the laundress had done the washing *before* they were taken. This leaves a period of at least ten days between the time the laundress washed in the Caven yard and that of waiting upon John Bolton. To read the report it seems very connected, but a close scrutiny detects some awkward gaps, which do not tend to prove a direct chain of testimony.

Further on the report says:

"There is no suspicion of the introduction of yellow fever this year by other means than that of the Souder, and *we are reduced to the necessity of fastening the guilt upon that particular vessel, unless we accept the theory of the spontaneous reproduction of the pestilence from local causes.*"

That would, indeed, be too great an admission; they might fall into the unpardonable error of agreeing with the Homeopathic Yellow Fever Commission, which asserts that the disease may orginate in New Orleans under certain conditions and combinations of factors. As to this point, I will refer to the report of Dr. Joseph Holt, Sanitary Inspector of the Fourth District, whose full and valuable report I reprint, as it has been made public by him in pamphlet form. He says:

"It has. by no means, been satisfactorily proven that the putrefying animal matter in the filth of great communities of human beings has not its position as a factor in the production or first appearance of the yellow fever poison. The virus once produced can undoubtedly be transmitted to and spread in smaller communities, irrespective of their sanitary condition. No instance has yet been adduced of yellow fever appearing *de novo*, except as associated with large communities in a filthy condition, or on shipboard, where the same unsanitary condition exists in a concentrated form. *There are precisely the same*

reasons for declaring yellow fever to be ab initio the product of human filth as malaria to be the product of a marsh or swamp. * * * Typhus, typhoid, diphtheria, the plague, and yellow fever, are only such products as we might reasonably expect from effete animal matter, under certain conditions of special foulness. Their specific nature, transmissibility and power of spreading, independently of the conditions of their origin, are no proofs against their having such an origin."

This is a very great admission from an allopathic source, and to the public it will be apparent that the question of the possibility of self-production of the dreaded fever is not an idle theory. Dr. Falligant, in his valuable paper, read before the Homeopathic Commission, says the distinction between the imported and indigenous yellow fever is characterized by its mildness when of local origin, and its malignity when imported. If the yellow fever was of *de novo* origin in New Orleans, in 1878, then his theory in that direction is confirmed, for the epidemic was certainly mild in its character, especially when we compare it to Memphis, Grenada, Chattanooga and Vicksburg.

Now, the question is, was it imported by the Souder? If so, it lay dormant for six weeks. If the germ can lay dormant for six weeks, and then be aroused into activity, then it is reasonable to suppose the time may be increased indefinitely. It is also reasonable to suppose that if the sanitary condition of the city furnished the necessary factors for its development, the epidemic was aggravated by the filth of the city. and the effete animal matter fanned the flame, against which disinfectants seemed to be powerless. The Souder had a clean bill of health when she anchored at the wharf; James Fordyce had a simple case of malarial fever, but it [illegible] be that Clark and Elliott died of yellow fever, if their symptoms were reported correctly. That their deaths were not immediately followed by an epidemic does not disprove the fact that they died of the disease. Still, after a lapse of weeks, when the next "suspicious" cases were noticed, it is just as reasonable to doubt that they spread the disease as to seek to disprove the theory of spontaneous production. The weight of testimony does not prove that the Souder was the progenitor of the epidemic, while ample proof is given that a great combination of producing factors was formed about this time. John Bolton is now conceded to have been a walking case of yellow fever, but it was not suspected until after the supposed infection was introduced from the Caven to the Bolton family by the colored laundress. So the diagnosis in this case was made afterward, by the aid of suspicious circumstances; still his death was rendered by the coroner as caused by congestion of the brain, simply, as the man had no physician. The next case is of Brady Martin, a pronounced case of yellow fever, who was taken on July 14th and died the 21st. In the mortuary report no death from yellow fever is reported prior to the month of July; still Clarke and Elliott, the pronounced cases, died in May. This discrepancy I do not and cannot explain. The gross mortuary tables, by months, from yellow fever, are as follows:

Table of Deaths from Yellow Fever.

	White.	Colored.	Total.
July	26	..	26
August	979	46	1025
September	1696	84	1780
October	1019	46	1065
November	140	7	147
December	3	..	3
Totals	3863	183	4046

These are the official figures of the Board of Health. There is no doubt that many deaths were reported as "malarial," "malignant," etc., for the death rate in those diseases is notably large. Before July, the death rate in these diseases amounted to six or eight per month. Observe how their proportions follow the epidemic.

The following table is of remittent, congestive or malignant, and malarial, unclassified:

	White.	Colored.	Total.
July	37	10	47
August	141	28	169
September	200	20	220
October	141	20	161
November	37	16	53
December	6	2	8
Totals	562	96	658

There seems to have been an epidemic, so to speak, in these forms of fever also, by a comparison with tables of previous years.

The foregoing tables show the death rate alone, by color. I have also arranged the tables in districts, of which there are seven. The reported cases, as far as known, are as follows:

CASES OF YELLOW FEVER.

First District	6,706
Second District	3,280
Third District	841
Fourth District	6,092
Fifth District	333
Sixth District	1,254
Seventh District	*70
Total	18,576

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*Supposed to be an error.

DEATHS.

First District	1326
Second District	803
Third District	362
Fourth District	598
Fifth District	51
Sixth District	247

Seventh District	70
Hotel Dieu	110
Touro Infirmary	33
Charity Hospital	411
Total	4011

The addition by districts leaves a difference of 45 deaths, being less than the mortuary report by months.

Of the number of cases, as far as classsified, there were

White	14,008
Colored	1,710
Male	8,707
Female	6,607
Adults	7,180
Children	7,534

A large number of cases were not classified, but the above figures are sufficient to determine ratios by.

I here add the report of Dr. Joseph Holt (allopath) to the Board of Health. The document is so able that I would be unwilling to merely quote from it. He is fearless in expressing his honest convictions, and such sanitary officers are the kind we need where yellow fever exists.

REPORT OF JOSEPH HOLT, M. D., SANITARY INSPECTOR, FOURTH DISTRICT.

OFFICE SANITARY INSPECTOR, FOURTH DISTRICT,
NEW ORLEANS, December 31st, 1878.

Samuel Choppin, M. D., President Board of Health :

SIR—I have the honor to submit the following summary report relative to sanitary affairs in the Fourth District for the year 1878:

Concerning the health which has prevailed during the year, it will become my painful duty to present the detailed account of the great epidemic of yellow fever which invaded the district, beginning on the seventeenth of July, and continuing until December.

It is essential to state here that, with the exception of this fearful scourge, the people have enjoyed an exceptional immunity from infectious diseases. There have been fewer cases of small-pox, for example, than at any time during the last decade.

YELLOW FEVER.

The first two cases occurred on the same day, July 18th, and on the same street (Phillip), about three squares apart.

The disease was clearly traceable to the Constance and Terpsichore streets center of infection.

Case 1.—John McIntyre, white, aged 27 years; native of New Orleans. Residence, No. 99 Phillip, lower side, between Chippewa and Annunciation. By occupation a laborer. Was taken ill July 18th, Dr. Holthoft attending. The nature of the case was satisfactorily developed only in the final symptoms. He was said to have thrown up black vomit about the time of his death, July 24th. The corpse presented strongly marked the post-mortem appearances of yellow fever. This man had recently spent much of his time at a grocery, corner of Constance and Melpomene streets.

Case 2.—Peter Lynch, a warehouseman, white, aged 29 years; native of New Orleans. Residence, Phillip street, lower side, corner of Constance. Was taken ill July 18th, Dr. T. Layton attending; Dr. A. C. Holt in consultation. The patient had never had yellow fever. Dr. Layton reports: "The only clue to the origin of the fever in his case, after very careful examination, was found to be the following: Every morning and evening, going to and returning from the warehouse at which he was employed (on Magazine street, near Lafayette) he was in the habit of walking the entire distance, and thus, twice daily, passed through a portion of the city which was at the time infected." He recovered; his case, however, was one of extreme severity.

Case 3.—John Schaeffer, white, aged 35 years; native of Germany; in New Orleans eight years. Residence, Third street, corner of St. Patrick; Dr. Pohlman attending; was taken July 24th; died July 30th. This man was a baker, and was in the habit of distributing bread about the neighborhood of Constance and Terpsichore streets.

Case 4.—Charles Babst, white adult; native of Germany; in New Orleans eleven years. Residence, First and St. Patrick; was taken ill on or about July 26th; Dr. Pohlman attending. He was a driver of the wagon and near neighbor of case 3. Recovered.

During the last days of July, sixteen cases of yellow fever occurred at as many different points throughout the district below Washington street. From the first to the eighteenth of August the disease seemed to remain in abeyance, but after that date it broke out with an uncontrolable fury, and soon raged as an epidemic.

Except the four particularly mentioned, none of the earlier cases seemed to have any relation in origin with the Constance street centre. However, this question admits of so many possibilities and doubts as to render obscure the actual source of their infection. The weight of testimony seems to establish the belief that the Fourth District was invaded from the First District.

DISINFECTION AND FUMIGATION.

From the appearance of the first case until the disease became epidemic, disinfection of streets and premises of infected and adjoining squares was accomplished with the utmost thoroughness. The streets, embracing one hundred and thirty-seven squares, were sprinkled with carbolic acid by the wagons. The yards, vaults and banquettes of sixty-one squares were carbolized by hand-sprinkling. During the entire period of the epidemic the rooms, flooring, bedding and premises of those who died were thoroughly carbolized. Three hundred and sixty-six premises were so treated. The rooms of one thousand three hundred and sixty-three houses were fumigated with sulphur.

From the experience of last summer it is impossible reasonably to affirm that carbolic acid exercises no destructive influence upon the yellow fever virus. Granting for a moment that it does possess such power, it was impossible, from the very nature of the circumstances attending its application, that the results of disinfection should have been different from what they were. How could it have been otherwise, while there always existed an entire freedom of intercourse between the sick and their unacclimated friends and relatives? How could it have been possible for any disinfectant, however absolute its powers, to have overtaken the germs of infection scattered by one or two hundred attendants upon a wake or funeral?

The use of carbolic acid to check the pestilence, *as an experiment*, had no scientific value whatever, inasmuch as the most essential requirements in the conducting of such an inquiry were in no measure complied with. The Board of Health was absolutely without the authority and power to enforce the requisites of success.

Let the case apply to any other pestilential disease—small-pox for example—and no one can deny that one wake, with people old and young crowded into the infected rooms, a sweltering mass of the living sitting for hours in the presence of the dead, would be quite sufficient to create as many foci of infection as there were mourners. No disinfecting agent, though its force were more subtle than the virus itself, could contend against such an unfair advantage.

When the Board of Health is clothed with the power of quarantining an infected house or square, just as it now may a ship; when it can exercise a sovereign control over the movements of the inhabitants of such infected centres, prohibiting general intercourse, and preventing the spread of the infection from the dead; enforcing its judicious regulations, supported by the whole weight of the law—then, and not until then, can the experiment of disinfection be subjected to scientific test or any decided benefit be fairly expected of it.

Let the agent to be tried be carbolic acid, sulphurous acid fumes, freezing, or whatever you will, its use can be justly called an experiment only when the conditions of success, so far as known, are reasonably complied with.

RELATIVE MORTALITY OF MALES AND FEMALES.

It is a curious fact, the explanation of which is to me by no means apparent. that the death rate of males was seventy per cent. greater than that of females, The relative proportion of males and females of the population so far from accounting for this difference is exactly contrary, and makes it greater than the above would seem to show. The sanitary census of 1877 shows a preponderance of one thousand two hundred and sixty-one females.

The exemption of the negro race is also strikingly shown in the table of mortality. There were five hundred and sixty-nine deaths among the whites, while there were only twenty-nine among the negroes, and that out of a population of six thousand eight hundred and eighty-three of the latter.

On account of the negligence of a few physicians in reporting their cases without stating any of the important particulars, such as name, date, location, age, etc., the tables are not as perfect as they would have been.

Sanitary Census of the Fourth District, City of New Orleans, taken during the Year 1877.

Number of whites		29,482
Number of blacks		6,883
Total		36,365
Number of persons natives of New Orleans—		
Whites	18,507	
Blacks	3,830	22,337
Number of persons of other States and foreign countries—		
Whites	10,975	
Blacks	3,053	14,028
Total		36,365
Number of persons who have had yellow fever—		
Whites	6,850	
Blacks	667	7,517
Number of persons who have not had yellow fever—		
Whites	22,632	
Blacks	6,216	28,848
Number of persons under 5 years of age, white	3,944	
Number of persons under 5 years of age, black	845	4,789
Number of persons from 5 to 21 years, white	11,232	
Number of persons from 5 to 21 years, black	1,971	13,203
Number of persons over 21 years, white	14,306	
Number of persons over 21 years, black.	4,067	18,373
Total		36,365

Cases of Yellow Fever in the Fourth District During the Epidemic of 1878.

Number of whites	4419
Number of colored	908
Number of color not stated	230
Number of cases supposed to have occurred in the Fourth District, but the locality of which was not stated	535
Grand total	6092

	White.		Colored.	
Males	2302		375	
Females	1902		449	
Sex not stated	215	4419	84	908
Adults	1314		192	
Children	2688		234	
Age not stated	417	4419	482	908

Natives	3027		247	
Foreigners	970		179	
Nativity not stated	422	—4419	482	— 908
Children under one year of age	47		4	
Children from one to five years	993		69	
Children from five to ten years	1013		107	
Children from ten to fifteen years	635	—2688	54	— 234
Number of deaths, white				569
Number of deaths, colored				29
Death rate among those taken sick, per cent				9 4-5
Number of squares the surrounding streets of which were disinfected by sprinkling carts with carbolic acid, in the outbreak of the epidemic				137
Number of squares the yards, vaults and banquettes of which were disinfected by hand sprinkling				61
Number of rooms the flooring, bedding, etc., of which were disinfected with carbolic acid				366
Number of houses the rooms of which were fumigated with sulphur				1363

Deaths from Yellow Fever in the Fourth District, Epidemic of 1878.

MONTHS.	WHITE.						COLORED.						Total deaths.
	Males.	Females.	Adults.	Childien.	Natives.	Foreignels.	Males.	Females.	Adults.	Children.	Natives.	Foreigners.	
July	2	....	2	....	1	1	....	....	....	....	.	....	2
August	33	22	28	27	30	25	....	....	....	....		...	55
September	176	107	115	168	177	106	11	6	8	9	10	7	300
October	140	75	79	136	135	80	4	8	4	8	9	3	227
November	6	8	4	10	10	4	....	....	....	....	....	....	14
Total	357	212	228	341	353	216	15	14	12	17	19	10	598

SANITARY CONDITION OF THE DISTRICT.

During the spring and summer the sanitary condition of the district was excessively bad. This was due to three causes: Absolute negligence on the part of the authorities and their employees; direct aggravation of existing evils in the dumping of garbage into the streets and filling of lots from the dumping ground; and the fact that no provision had ever been made for properly cleaning the district by sanitary engineering. In the absence of the latter the district can be kept tolerably clean only by unremitting hard labor on the part of a large scavenger force. The instant they slacken their work, that instant the filth accumulates. It has by no means been satisfactorily proven that the putrefying animal matter in the filth of great communities of human beings has not its position as a factor in the production or first appearance of the yellow fever poison.

The virus once produced can undoubtedly be transmitted to and spread in smaller communities irrespective of their sanitary condition. No instance has yet been adduced of yellow fever appearing *de novo* except as associated with large communities in a filthy condition, or on ship-board where the same unsanitary condition exists in a concentrated form.

There are precisely the same reasons for declaring yellow fever to be *ab initio*, the product of human filth as malaria to be the product of a marsh or swamp. Emanating from a more pestilential and deadly source than mere rotting leaves and a wet soil, the virus is possessed of special qualities in keeping with the foul source of its origin. Unlike malaria, in its origin, it is limited geographically, it is transmissible in fomites, and is of all specific poisons perhaps the most intensely infectious, the disease runs its course quickly and ceases, one attack usually giving immunity from a second.

Typhus, typhoid, diphtheria, the plague and yellow fever, are only such products as we might reasonably expect from effete animal matter under certain conditions of special foulness. Their specific nature, transmissibility and power of spreading independently of the conditions of their origin, are no proofs against their having such an origin.

That it is possible in so large a city as this to attain such sanitary perfection as will make the production of any one of these specific poisons impossible is altogether questionable.

If achievable, it can only be accomplished by years of energetic effort, and the judicious outlay of money without stint. But if we cannot hope to attain perfection, we can at least try to better our condition by correcting some of the worst features of existing evils.

EVIL NO. 1.—THE PRIVY SYSTEM.

Standing at the very head of these is our present system of privy vaults. It is not asserting too much to declare that our privies are the most dangerous enemies of our lives and happiness. There is hardly one in New Orleans but whose contents have free access to the soil to saturate the ground with liquid ordure. Thousands of them were originally huge boxes or wooden tanks, but are now only common sinks or pits in the ground, with hardly a vestige of the woodwork left. The most mischievous parts of their contents soak into the earth, and so contaminate the soil under our feet that specimens of subsoil water taken from different depths, as low as ninety-five feet, and from different parts of the city, have been carefully analyzed by Professor Joseph Jones, and have yielded a large per centage of urea and organic matters, the products of animal excretion, fully fifty-three grains to every gallon. "It is evident," he says, "that these waters are suitable neither for drinking, nor for washing, nor for cooking. In fact, they are as bad as, if not worse, than the drainings of graveyards"—which he proves by comparison with certain English analysis. During wet weather these vaults or sinks quickly fill with water and overflow, flooding yards and gutters with ordure. Under a sun almost tropical one-half the year, this ferments, and emits a most abominable stench, which, of all others, must be a fruitful source of disease, operating directly in its production, and indirectly in lowering the vital stamina of the inhabitants.

While in wet seasons these vaults are flooded, in dry weather, as before stated, they are largely emptied by their fluid contents soaking into the ground, thus saturating the soil upon which we live with human excrement. In this respect it may be properly stated that the people have a huge privy in common, and that the inhabitants of New Orleans live upon a dung-heap.

Is it possible to imagine a sanitary condition more deplorably bad? That epidemic diseases should sweep at times as a fire is no marvel. It is a righteous retribution for violated law. The excellent health we usually enjoy is more greatly to be wondered at. However, so long as this flagrant disobedience of sanitary law exists, so long must we surely pay the price, as we paid it last summer.

It is idle to complain of an evil unless we can suggest a remedy. In this instance the first suggestion naturally presenting itself is the complete abolition of privy vaults located in the soil, and in their stead all water-closets and privies to be connected with a system of underground sewerage, constantly washed through from the river. But in practice this may not be feasible on account of insufficient fall, the city being built on a plane, almost a water level, at times below the surface of the river, the consequence of which would probably be frequent choking up by solid deposits and flooding by rains, not to speak of the enormous cost of such a system. If this is impracticable, in the absence of a better methed, every privy vault not properly constructed should be rebuilt of brick, laid in hydraulic cement, according to specifications, and thoroughly cleaned twice a year without exception.

EVIL NO. 2.—THE GUTTER SYSTEM.

The second in importance of our sanitary evils is the present system of gutters. In many parts of the city the grading of the street gutters is so imperfect as to render them utterly unfit for drainage. In the topography of this district there are depressions involving the area of a square, and in some places of several squares. The gutters of such areas are lower than their outlets, and hence become stagnant cesspools. With a few exceptions, all the gutters of the district are badly constructed and exceedingly difficult to keep clean.

The Remedy.—They should be properly graded, the bottoms laid with flag, both sides of brick or flag, and the whole system constructed with a special view to being flushed during the entire warm season with river water.

EVIL NO. 3.—LOW LOTS AND HOUSES WITH LOWER FLOORS RESTING ON THE GROUND.

In the district are many lots, vacant and occupied, which are below the prescribed level—in some instances two feet below the surrounding lots and banquettes. During the alternating wet and dry weather of summer these are great pools, even under the houses, frequently drying up, and in doing so emitting the most noisome exhalations, intensified by the presence of putrefying carcasses of domestic animals and fowls. If there be a protracted dry spell the drying up of these pools continues until the sun blazes with a tropical heat upon the exposed soil covered with putrid animal and vegetable matter. There are many tenement houses into which are crowded the poverty stricken, squalid negroes and the poorest whites. The ground floors of these habitations rest, in many instances, directly upon the earth; the tenants sleep on low cots or upon the floor, with doors and windows closely shut. A few hours after bed-time the interior of these houses is almost intolerable. The construction of these buildings not only adds to the discomfort and misery of the poor, but also depresses their vitality, and causes directly disease and a higher rate of mortality.

The Remedy.—Property holders should be made to fill their lots to the prescribed level; and every house, the lower floor of which is closer to the ground than the distance specified by law, should be declared a nuisance, and the owners compelled to raise the whole structure high enough to permit free ventilation between floor and earth, and proper ventilation of rooms secured by law.

EVIL NO. 4.—INSUFFICIENT WATER SUPPLY.

A year seldom passes without the prevalence of at least two protracted droughts. Two weeks of dry weather suffices to empty many of the cisterns, and a continuance of three weeks causes a widespread water famine, attended with the utmost distress. So desperate are the necessities of the poor at times that they are compelled to resort to the street gutters to obtain the water which is to supply all of their wants, to be used in cooking, drinking, washing, etc. In times past, when the condition of the humbler working classes had become extreme, the authorities, resorting to the only possible measure of relief, have allowed the fire plugs to run for a while morning and evening, partly to wash out the filthy gutters and partly to afford from the same gutters to our fellow citizens, men, women and children, their drinking water. The whole of this suffering, which has been silently endured year after year, is chargeable directly to miserly landlords, who build tenements avowedly for rental, feeling nothing and caring nothing for the health, comfort or convenience of their tenants.

It is they who have built these hovels in the mud, the very construction of which makes groveling wretches of the men and women whose necessities deliver them into the hands of men who are themselves dead to any instinct higher than the clutching of a penny; of men who are by nature mean, albeit, capital fault finders. Dull to every touch of sympathy, their baseness finds expression in the pallid faces and dejected aspect, in the discomfort and utter misery of their tenants; it speaks in the cry for water.

The Remedy.—The law should lay upon a certain class of our property holders its strongest hand.

The ordinance relative to water supply, of August 12th, 1870, should be rigidly enforced after having been so amended as to require that no premises shall have less than eighteen hundred gallons cistern capacity, when depending upon cisterns alone. Every cistern should be cleaned at least once annually. Besides this the most strenuous effort should be made to extend the water works, so that every household might have a hydrant at such reasonable rates as to make it generally available.

EVIL NO. 5.—COW STABLES.

There are eighty-four cow stables in the Fourth District. With a few exceptions these are located in the most densely settled parts of the district Even when carefully attended they are a nuisance to their neighborhoods. They should be removed beyond the pound limits of the city.

EVIL NO. 6.—LOCUST GROVE CEMETERY.

The Locust Grove Cemetery, or Potter's Field, is one square of ground in which are buried the pauper dead of the entire city, formerly located on Sixth street, between Locust and Freret streets. Having been used for many years, the same graves were made to receive the bodies of many dead—as many as six occupying a single grave!

I, myself, making an inspection, witnessed the burial of a corpse. The grave was prepared by uncovering a coffin, opening it, raking the bones together and throwing them out, breaking up and prizing out the old coffin, and depositing the new in the mould of the former. When laid in its uncertain resting place the lid of the box, like that of the one preceding, was two inches below the surface of the earth. To hide it, the earth formerly removed was piled upon the coffin in a mound about two feet high. In this covering I counted the skulls of three former occupants, besides observing other bones innumerable. So filled with bones was the earth as to make the use of the spade extremely difficult. Another coffin lid, warped by the sun, displayed in hideous reality the body of a poor wretch who had died a few months before; the stench was disgustingly perceptible. The whole surface of the ground was strewn with ribs and small bones, like pebbles upon the hills. Here and there huge thigh bones served as head and foot stones to the unknown dead.

The citizens living in the vicinity presented a petition to the City Council March 13th, 1877, wherein they set forth in the strongest terms the horrible facts relative to this graveyard; how that, in the summer season, the stench from human bodies pervaded their homes; that, whether eating or sleeping, in doors or out, they were ever in an atmosphere heavy with exhalations from the dead. They pictured the disgusting sights presented and forced upon the gaze of themselves and of their children.

They referred to their pitiable condition during an epidemic, when the putrefying dead were piled in heaps, under a blazing sun, awaiting burial, and the over-burdened earth reeked with rotting human flesh, while clouds of flies swarmed back and forth upon the graves, and *upon their tables!*

They urged in this prayer their constant dread of the infectious and pestilential diseases whose victims were brought from all parts of the city and buried in their midst, hardly covered from their gaze.

Requested by these people, and having made repeated inspections, I appended to their petition my official report, declaring this graveyard an outrageous nuisance—first, as a sanitary violation of the most serious kind, not only prejudicial to the people of the immediate neighborhood, but dangerous to the entire city, inasmuch as the bodies of those who had died of infectious diseases were brought from one end of the city to the other, through densely inhabited quarters, to be buried here. The festering dead, in loosely made coffins, and in open wagons, were brought from the small-pox hospital on Elysian Fields street, at the lower end of the city, oftentimes a loathsome mass of flesh melted down by confluent small-pox, trundled along slowly through narrow streets crowded with unsuspecting citizens, the way through the middle of the city almost its entire length. A wagon load of those dead of small-pox and other diseases were sometimes hauled to this place late in the evening or after nightfall, and dumped for interment the next day.

Second, as a violation of the plainest laws of humanity and instinctive decency, in the infliction upon the helpless of such loathsome sights and disgusting smells.

The neighbors assured me that hogs frequently made their way through the picket fence, and even declared to me that they had been known to root up the dead out of their graves, and to revel in their carcasses the live-long night, filling themselves with human flesh to fatten on it. Whether this statement be true or not, it is certain they were frequently in this graveyard, and the coffins, sometimes not below the level of the surface, were often made bare by the rains.

Adding danger to the disgusting features of this horrible picture, the boards of coffins broken up, as described, were in constant demand to be used as fire wood for cooking and for the construction of yard fences, by certain degraded whites and negroes in the district.

Third, the injury to the people in the depreciation of their property in value.

I earnestly recommended the selection of a site for a Potter's Field in the neighborhood of the cemeteries, far in the rear of the centre of the city, out of sight of habitations, and directly approachable from all parts of the city without having to traverse its length.

The City Council was about to establish a new pauper graveyard. This petition, numerously signed, was presented at the City Hall, and, as it ever is with the prayers of the poor when they cry out in their affliction, their supplication fell muffled upon the dulled ears of rulers fattened with brief authority, and where they looked for judgment, behold oppression! The petition itself was buried in the needy man's official graveyard, a pigeon-hole, no special record nor account kept of it. A square of ground, however, was at once selected adjoining immediately the first.

This is now the Potter's Field; a low marsh, wherein the sexton performs his heavy task faithfully and as best he can; sometimes floating to their graves the dead and weighting them into their homes, the whole graveyard being often a foot under water. The nature of his field renders it impossible for him to dig these graves deeper than has been his habit. But this is Potter's Field; an injurious infliction and an outrage upon the living, a disgrace to our humanity, to our morals and to our city, an indecency perpetrated upon the dead *because they died poor!*

SANITARY MEASURES GENERALLY CONSIDERED.

The whole question of the necessity of sanitary reform may be reduced to the following summary: While we cannot demonstrate a direct causative relation between the filth of a city, town or ship and the first appearance of yellow fever, the disease invariably develops itself *primarily* associated with a bad sanitary condition of the community. In certain cities formerly devastated by the pestilence, the scourge has ceased coincidently with an improved sanitary system.

If there exists in truth any relation between filth and disease, one duty paramount to all others confronts the people of New Orleans: that they shall perfect the sanitary condition of our city. This can only be done in accordance with a system of the most liberal and enlightened sanitary engineering, and in an absolute obedience to all the laws relating to the public health.

By the enforcement of wisely appointed sanitary measures we will accomplish a double reformation, the crowning necessity of our time; we will improve by it the health and prosperity of our people, and in equal measure diminish the miseries of our poor.

We must learn of Rotterdam.

THE WEATHER.

Below I give the statistics of the temperature, state of weather, per cent. of humidity, velocity and direction of the wind, and the death rate, by days, from July 22 to November 1, being the period of the fever as epidemic in New Orleans. The information is compiled from a chart published by J. F. Deeves, New Orleans, La., and is official. The chart itself is a very ingenious affair, and is meeting with quite a rapid sale in all parts of the country.

Did I possess information of this kind from different localities, the effect of various changes in the atmosphere upon an epidemic would be apparent, but, unfortunately, similar observations at Memphis and Vicksburg are incomplete, and therefore not available.

TABLE FROM JULY 22 TO NOVEMBER 1.

DATE.		Temperature, (degrees.)	State of Weather.	Humidity, (per cent.)	Velocity of wind, (miles per hour.)	Direction of Wind.	Death rate, (per diem.)
July	22	89	Threatening.	75	7	E	1
..	23	91	Fair.	66	9	N	2
..	24	92	..	60	6	E	1
..	25	87	..	54	5	N E	2
..	26	90	..	65	5	W	5
..	27	92	..	63	4	N	3
...	28	89	Clearing.	57	10	N W	7
...	29	93	Fair.	66	5	S E	5
..	30	87	..	49	6	S	1
..	31	89	Threatening.	72	12	N W	5
August	1	88	Fair.	66	9	N W	7
..	2	90	..	66	9	N	7
..	3	88	Light rain.	60	10	N	7
..	4	80	..	71	5	E	11
..	5	88	Fair.	82	7	N E	12
..	6	88	..	62	8	N	5
..	7	90	..	59	6	N W	7
..	8	91	Clear.	57	9	N	11
..	9	91	Fair.	63	13	N W	12
..	10	87	Cloudy.	60	13	N	8
..	11	87	Fair.	62	7	N	14
..	12	88	..	62	4	N	12
..	13	85	Cloudy.	68	7	S E	21
..	14	84	Fair.	68	4	S W	20
..	15	90	..	60	12	W	17
..	16	83	Cloudy.	67	18	S W	29
..	17	87	Fair.	62	18	N W	27
..	18	89	Light rain.	63	12	W	47
..	19	89	Fair.	59	11	N	42
..	20	91	..	51	6	N	41
..	21	92	..	51	6	E	40
..	22	88	Light rain.	62	7	S	58
..	23	90	Fair.	57	10	W	40
..	24	89	..	53	11	N W	42
..	25	89	..	77	5	S	33
..	26	84	Threatening.	68	13	N E	44
..	27	87	..	65	3	S	49
..	28	84	Cloudy.	57	6	N	57
..	29	84	Thunder, heavy rain.	71	0	0	59
..	30	84	Fair.	64	6	S	54
..	31	87	..	52	4	N	48
Sept'r	1	80	Light rain.	74	3	N	88
..	2	87	Fair.	75	4	W	88
..	3	80	Light rain.	76	0	0	83
..	4	81	Cloudy.	76	6	S W	72
..	5	85	..	77	6	S	86
..	6	88	Fair.	75	7	S	61
..	7	88	..	76	7	S	77
..	8	80	Light rain.	84	8	S	81
..	9	87	Clear.	58	8	S E	87
..	10	88	..	56	12	S	80

TABLE FROM JULY 22 TO NOVEMBER 1.—CONTINUED.

DATE.	Temperature, (degrees.)	State of Weather.	Humidity, (per cent.)	Velocity of wind, (miles per hour.)	Direction of Wind.	Death rate, (per diem.)
Sept'r 11	78	Cloudy.	61	19	S	90
.. 12	76	Clear.	45	20	S E	57
.. 13	73	..	39	10	S E	58
.. 14	77	..	42	10	S	59
.. 15	80	Fair.	55	14	S W	59
.. 16	80	..	66	16	W	73
.. 17	83	Clear.	83	14	W	63
.. 18	84	Fair.	57	15	W	68
.. 19	84	..	61	16	N W	55
.. 20	85	Cloudy.	61	12	N W	69
.. 21	79	Clearing.	78	11	W	62
.. 22	78	..	82	14	S W	40
.. 23	84	Fair.	82	10	N W	45
.. 24	84	..	61	11	S W	59
.. 25	84	..	61	7	S W	36
.. 26	84	Clear.	54	12	W	44
.. 27	83	Fair.	67	3	N W	51
.. 28	83	..	64	14	W	55
.. 29	81	Clear.	63	13	W	53
.. 30	82	..	63	16	S W	35
Octob'r 1	80	Light rain.	82	2	S W	54
.. 2	85	Clear.	54	1	W	56
.. 3	85	..	57	8	S	51
.. 4	85	..	47	4	S W	54
.. 5	79	Light rain.	70	6	N	52
.. 6	79	Fair.	70	8	S W	59
.. 7	82	..	60	4	S W	41
.. 8	84	Threatening.	61	4	N W	49
.. 9	78	Light rain.	82	13	S W	42
.. 10	77	Cloudy.	74	8	S E	48
.. 11	80	Fair.	62	8	S E	49
.. 12	78	Clear.	54	4	S	40
.. 13	80	..	51	7	S W	50
.. 14	80	Fair.	52	15	S W	29
.. 15	79	Cloudy.	66	12	W	30
.. 16	81	..	59	12	N W	26
.. 17	74	Fair.	47	16	S E	24
.. 18	69	Clear.	27	14	S E	36
.. 19	64	..	29	8	S	25
.. 20	68	..	59	10	S W	28
.. 21	74	..	62	12	W	44
.. 22	65	..	52	20	S E	42
.. 23	64	..	52	6	S	19
.. 24	68	..	61	8	W	16
.. 25	70	Fair.	65	9	S W	18
.. 26	72	..	69	16	W	21
.. 27	68	Threatening.	84	14	S	21
.. 28	75	Cloudy.	68	7	W	22
.. 29	70	Fair.	80	4	N W	10
.. 30	66	..	69	13	S	13
.. 31	62	Clear.	27	17	S	12

Further along I publish a paper by Dr. L. A. Falligant (homeopath), of Savannah, Ga., and the reader can compare it with the report of Dr. Joseph Holt. I am no scientist, only a plain historian, but taking the two papers, one from a renowned homeopath, the other from the pen of a talented and honest allopath, the most enthusiastic believer in the sole doctrine of importation will find a little damper put upon his theory. Read then the report of the Homeopathic Commission, and in weighing all arguments, note the perfect harmony of ideas, and the proof by unassailable facts. Will not the verdict of the public be that the epidemic of 1878 started in New Orleans, possibly, only by the imported cases, but more probably by the combination of the factors for its production, namely, a tropical summer, transforming our temperate zone into a torrid, a deficiency of ozone, and the extreme filth of the city.

MEMPHIS.

It is a very difficult matter to locate the first case of fever in Memphis. The one first officially announced was that of Mrs. Kate Bionda, on Front street, August 13th, 1878. It is however undisputed, at this time, that other cases were known before, but no record was kept, as physicians were tardy to declare the malady yellow fever, in the start, when there might have been, as they then thought, a doubt of the correctness of the diagnosis. To follow the spread of the disease, after the official announcement, would be a task that Memphians have not succeeded in, although right on the field. The wildest stampede began, and every train out of the city was crowded to its utmost capacity. The negroes, however, did not run, as they had heretofore considered themselves exempt from the disease ; but in all localities, 1878 has shown this belief to be a fallacy, although, in comparison with the whites, the mortality among the negroes is very small. It is hard to estimate the number of whites who stayed in Memphis, but there were fully 15,000 negroes who remained. The rapid spread and malignity of the disease soon ran ahead of the records, and beyond the death list, nothing is certain. The following is the most accurate estimate that can be made :

CASES.	
Whites (about)	6,000
Colored (about)	9,000
Total	15,000

DEATHS.	
Whites (about)	4,000
Colored (about)	1,130
Total	5,130

The death list of citizens of Memphis, is, per names published, 5,130. For this information, I am indebted to the Howard Association, who are now publishing an extended exhibit of their work, donations and a general history of their city.

Of the origin of the plague in Memphis, not much can be said. Newspapers have dwelt on the putrid state of Bayou Gayoso and the rotten condition of the Nicholson pavements, but there is no testimony that shows this to have aided the spread, or increased the malignity. It was undoubtedly imported into Memphis by persons off the river, as the first cases were among the people in contact with river travel, and their location on the wharf. That the fever would have been just as malignant had Memphis been as clean as a parlor is reasonable to suppose; but according to the germ theory, there may have been active fomites in the city since 1873, and one spark, under the peculiar state of the weather, may have ignited the whole mass. To guard against this, the strictest sanitary precautions are requisite. Memphis seems to have been a veritable hot bed, as no other city furnished as many cases among its refugees. Refugees carried it to California, and even on the ocean from the ill-fated city. The Howards of Memphis deserve the greatest praise. Not only did they care for their own citizens, but they sent relief trains and nurses out on the railroads for over one hundred miles in every direction. On their books were seven thousand nurses under pay, and they gave relief to the enormous number of 28,000 cases of fever. The expenditures out of the relief fund were nearly half a million dollars.

The general type of fever in this locality was worthy of particular note. The temperature of the patient was excessively high. Think of a patient with a temperature of 106 degrees and a sluggish pulse of 70 beats! This was a very fatal symptom. Did the temperature and pulse agree in altitude, the chances of recovery were fairer; but 85 per cent. of the cases had this terrible phase, and with their parched, cracked tongues and intense heat, the question of death was a matter of short duration.

Dr. Morse, one of our eminent physicians, was himself prostrated in the beginning of the plague, and so severe was his attack, that he could scarcely be counted as having treated the fever at all, as he rose from his bed when the last cases were reported. Dr. Quinby, another one of our Memphis brethren, did noble work from first to last, and from his record the Homeopathic Commission procured their Memphis figures. I was in Memphis nearly one week, trying with strenuous efforts to gather statistics, but as to age and sex, there is no record—in fact, nothing is positive except the names of 5130 victims, and some gentlemen do not consider this to be the full number. To think of a mortality of *seventy-five per cent.* among the whites, is horrible enough, yet figures on the most liberal estimates place it in this appalling light. In no place except Chattanooga was the mortality of negroes more than in Memphis (about ten per cent.) People too poor to flee far, encamped near the city; and soon these camps had the epidemic in nearly as severe a form as the city itself. Still, the depopulation of Memphis was better, as it has been truly estimated that the mortality among whites would have reached 90 per cent. had they not scattered. To deal with figures has been my aim, so of the mournful scenes of Memphis I will not speak. The task of compiling the reports from the whole of the South is a greater one than the public imagine, and when I finished my journey over the field from New Orleans to Memphis, and from the Mississippi river to Alabama, I felt that I had done all in my power to procure reliable information. Doubtless it would have been much more economical to have written to the points, but I did not feel that I was doing my subject justice in collating the reports in that manner. Two or three lines of figures do not take up much space in a book, but to procure those numbers, I often had to pore over the books of Howard Associations and Boards of Health for days at a time, in order to traverse the battle-ground of three months.

The fearful malignity of the plague in Memphis is apparent, when we know that 15,000 cases, 9000 of whom were colored, furnished a death list of fully 1000 more than did New Orleans with its official number of 18,000 cases. The death rate of New Orleans is very accurate, while that of Memphis is perhaps under the mark. The highest daily death rate of New Orleans was 90, while Memphis exceeded that number several days.

Memphis, at best, contained about 42,000 inhabitants, and the number of those who fled was overrated. One yellow fever publication places the number of refugees at 40,000. This cannot be true, if 15,000 negroes alone remained. The population of the city was probably 15,000 negroes and 8500 whites.

GRENADA.

The little city of Grenada is in the northern part of Mississippi, 100 miles south-east of Memphis, Tenn. It has a population, (or did have) of about 2,000 to 2,500. About August 10th, suspicious cases of fever appeared, but it was not declared to be yellow fever until about August 12. Then the plague spread over the city with the greatest rapidity and virulence. The disease attacked the blacks here, but not so violently. The list of cases and deaths is as follows:

CASES.

Whites in Grenada and vicinity	1,092
Negroes " "	400

DEATHS.

Whites in Grenada and vicinity	368
Negroes " "	39

The scenes in Grenada, told me by an eye-witness, were simply appalling. The deaths were in such rapid succession that graves could not be dug quick enough to receive the bodies, and often corpses, as in Vicksburg and Memphis, were left above ground all night.

There seems to be a general idea as to the sewer, in Grenada, being the cause of the virulence, but it may be remarked here, that in no instance in any part of the great country infected has the course of the disease been identical with the filthy localities. Once propagated, it spreads independent of sanitary or unwholesome causes; and as considerable discussion has been indulged in, regarding the Grenada sewer, it is proper to refer to the matter. The sewer was not opened in August, and its condition was not so filthy as represented. As to the festering carcasses of rats, dogs, cats, etc., I could find no corroboration of the report. This city is high, with good drainage, and it is absolutely certain that it was imported. Once imported it spread rapidly, and did not follow the line of the sewer, but like a mighty wave swept over the city and contiguous country. There are a great many theories as to how it got foothold, and I have facts in my possession, out of which we can work up a good case for Grenada. As I finish my sketches of the different cities with that of my own, Vicksburg, I will take up the thread of narration and chain of testimony in full.

HOLLY SPRINGS.

This city is near the line of Tennessee, and is the county seat of Marshall county, Miss. Its location is very high, and never had yellow fever been known there. There was a report of yellow fever among the United States troops about August 11 or 12, but the citizens laughed at the idea and invited refugees to come to their doors and hearths. About the last week in August, several refugees had well defined cases of yellow fever, and the first death was that of a Grenada refugee on the 26th. In three or four days, the disease had spread over the city, and Holly Springs was never again to boast of its exemption. No filthy streets were here, no stagnant lakes, and the first authentic cases were refugees. But the yellow fever alarm of August 11 or 12 was not noticed, as refugees kept pouring in from infected places; among them was it first recognized. The following is quite a correct table of cases and deaths, but is entirely unclassified.

CASES.

Holly Springs and vicinity	1,300

DEATHS.

Holly Springs and vicinity	352

I do not deal with incidents, I try to gather statistics, and although this short sketch of Holly Springs may appear insignificant, yet it has its weight in the whole. In death lists, we can never find the true numbers—some are unknown, and to write to a city to get a correct death list after the harrowing times of 1878, is an undertaking which depends on the size of the city for accuracy. Small towns, visited by the scourge, have reliable figures, because the field was small, and also the figures themselves.

JACKSON, MISS.

The capital of the State, is at the point of intersection of two large railroads, the V. & M., the great thoroughfare to the Eastern and Northern cities, and the N. O., St. L. & Chicago, the direct road from New Orleans to the cities named and the great West. A very strict quarantine was early established, and not until the last of August did the fever make its appearance. The date of the first death was August 31. The next death was September 23 and the spread then was quite rapid, and among the whites very severe. Out of 173 cases of whites, 49 died, or 28 per cent., while among the blacks, out of 317 cases, only 35 died, or 11 per cent. The cases and deaths are as follows:

CASES.

Whites	173
Blacks	317
Total	490

DEATHS.

Whites	49
Blacks	35
Total	84

The date of the last death was Nov. 28, 1878. Jackson was well provided for, being in readiness for over one month to battle the plague, It had an excellent Howard Association, and the work of caring for the sick was entrusted to competent hands.

VICKSBURG.

It is natural that I would bestow more attention upon the city in which I remained from the start to the last of the epidemic; so I will treat rather more fully of the *origin* of the fever in this city.

On the 19th of July, the towboat John Porter and barges left New Orleans for the Ohio River. Up to this time, not a case of fever had been publicly spoken of in New Orleans, (still Clark and Elliott had died May 15 and 30th, respectively,) and it was not until July 24th, that the New Orleans Picayune startled its city with the announcement of fourteen cases, seven of which proved fatal. On the 26th of July, the Vicksburg Herald published an editorial to the point. It advised the people of Vicksburg to "clean up" and quarantine, In the river columns was the following:

"The towboat Porter, which had passed up the day previous (24th) returned yesterday morning (25th) to bury a young man named Wilson, a fireman and brother of one of the engineers. She resumed her journey, after laying here until 11 a. m."

There was an error in this statement, it should have said the engineer Bryan. Thomas Murphy is reported by our sexton as having died in the Hill City Infirmary on July 23, but it is evidently an error as the Porter did not pass up until July 24th, (according to the Herald) and he was put off here from that boat. Henry Bryan died on the river, about forty miles above Vicksburg, but was interred in the city cemetery. Thomas Murphy died here (in the infirmary). Jas. McCallum also is reported as having died on the 25th. The next death is that of Franklin Townsend, a passenger on the City of Alton, who was put off here to die on Aug. 1st. The next death on the list is Paul Stoltz, August 9th. (This was afterward added to the list, as he was conceded to have been a case).

There is a very interesting little story of this man, which may prove of interest to the public, so I will give his history, from July 24th, to the day of his death.

Stoltz was an engineer, and on the 24th July, was in Vicksburg. When the John Porter came back to bury her engineer, Stoltz shipped on her in his stead, and filled the position until the boat reached Cairo. She arrived at Cairo on the 29th of July, and the Cairo Bulletin of August 1 had the following:

"The long looked for and much dreaded John Porter, which has been reported a floating pest-house, came up from New Orleans. The tug met her at the mouth of the river, and our city fathers and medical advisor boarded her and found her in a healthy condition. They gave her permission to land, and so ends the much talked of yellow fever scare."

She seems to have remained at Cairo for some days after, as the Vicksburg Herald of August 7, has this paragraph in its river column:

"The towboat John Porter is at Cairo repairing boilers. She goes to St. Louis, before proceeding to the upper Ohio. Her Master, Capt. Mahan, persists in it that it was nothing but ice water, but then he don't care to chance another ice water epidemic."

Now, the Porter reached Cairo July 29, and on the 5th of August, Paul Stoltz concluded to come back to Vicksburg, his home, because he was sick. He left Cairo on the 5th, and came down the road, arriving at Jackson, Miss., on August 7, at 2 A. M. He left Jackson and came in to Vicksburg (45 miles distant) at 10 o'clock the same day. He was unwell from the time he left Cairo until he arrived in Vicksburg. but would not give up and go to bed, even after arriving in Vicksburg. On his arrival he went to his lodging house near the depot, but after lying down a few minutes, he arose and remarked he was going up town to get some medicine, as he felt worse lying down than he did standing up.

He first stopped on Washington street, at the drug store of T. J. Thompson, and talked at length about the Porter and the sickness on board, but laughed at the idea of yellow fever, and remarked: "Why, they no more had it than I have now." He walked down the street, and talked to numbers of people, but at last went back to the house near the depot and lay down again. The health authorities had their suspicions aroused, it seems, and ordered his removal to the hospital; a conveyance was sent down for him, *and his bedding and clothing burned in front of the house.* He was taken to the hospital, but was denied admittance, as the authorities, interested in his removal, had failed to give him the necessary certificate, so he was trundled back to town, and it was not until late in the evening that he was finally admitted. He got better, and would not be kept in bed, and on the 9th of August he breathed his last.

Now, he *sat close* to T. J. Thompson for fully two hours, and talked. This was August 7th. On the 10th of August, Thompson died, and it was officially announced as the first case originating in the city, by the Board of Health, on the next day. But, remember, it was two or three weeks after this, when the fever was raging, before Stoltz's death was put down yellow fever, and his case pronounced a walking one.

Now, I have the testimony of several witnesses, and, from their assertions, I can follow Stoltz every mile from Cairo to Vicksburg. Mrs. Blake was the first witness I interviewed, and she said:

"I left Cairo on August 5th. We did not notice Stoltz until we breakfasted at Martin, Tenn. He sat at the table, and threw his hands up to his head and said, 'Oh, my!' It attracted the attention of all in the breakfast room, and the landlady came around to him, and asked if he would like to have a cup of tea. He replied he could not eat anything. As he rose from his seat he staggered and sat down again for a few minutes. He then went out to the train, and got into the ladies car. He was quite near me in the car, and he talked to me of the Porter, and stated how he had left *all sick*. There was no talk of yellow fever then, so we did not get frightened at his remarks. I was the principal one who assisted him, except an elderly lady who went on to New Orleans. There were also three Sisters from a convent between New Orleans and Jackson, who were only one seat behind him. The three sat in one seat, as the car was full. He was stretched out on a seat by the door, his coat off, 'burning up,' as he expressed it. His cheeks were of a bright scarlet, and he was thirsty. About two o'clock he commenced to vomit, throwing up a dark substance, mixed with blood, but I think the blood was only from his mouth, as his gums were bleeding. Some ladies thought he had been on a spree, but I told them the man was really sick. He told me his name, as he was a stranger to me, and told me he was bound to get home to Vicksburg. I did not see him after we arrived in Jackson, as I did not go into Vicksburg until a day or two afterward."

I interrogated Mrs. Blake then as to the number of passengers getting on and off the car she was in, to which she replied:

"A lady and husband got off at Milan, Tennessee. They sat about three seats opposite Stoltz. A lady and three of her own children, and one of her sister's children, with her brother, got off above Canton, Miss., to go to a little town in the country, the name of which I do not now remember. I know positively of these persons, as I was talking to them, and people on trains get acquainted soon; but I do not know their names now, as the epidemic made me forget everything nearly that happened before. Besides these I know that numbers of people got off the train at some *good-sized towns*, although I do not remember many except Water Valley."

I then wrote to the convent, and received the following reply:

CHATAWA, February 25th, 1879.

Esteemed Sir—With pleasure I comply with your request. We were on the 5th of August on the Jackson road train. This sick man suffered very much. I spoke to him; gave him some strengthening drink; he said he was going to Vicksburg. I did not know he had the yellow fever. I was not afraid.

None of us three Sisters had the fever. We enjoyed and are still enjoying very good health. There was neither any fever in our little town, thanks be to God. This is all I have to say. Hoping that it will be satisfactory,

Respectfully, SISTERS DE NOTRE DAME.

In addition to this testimony, the conductor on the train bringing him to Vicksburg testified to the bleeding at the gums—in short, there is no doubt that Stoltz was a walking case of yellow fever, of the hemorrhagic type, and his close proximity to Thompson, the morning of his arrival, is pretty fair circumstantial evidence that he communicated the malady to the last named gentleman. Besides, the lady to whose house Stoltz went, on his arrival in Vicksburg, was taken with the disease two or three days after. (My authority for this is the testimony of her next-door neighbor, who lost a child on August 22, after an illness of four days.) Here are two more cases, which the strongest kind of circumstantial evidence point to Stoltz as the cause of infection. By this time the epidemic fairly began on the levee and Main street, two widely separated districts, while the rest of the city was clear, remaining so until about August 29, when the spread became general. On the 8th of September your humble servant himself fell. I had all along taken notes of the progress, and the lapse of twelve or fourteen days, superinduced by my prostration, caused me to lose the direction of the fever. The levee, the first district attacked, was nearly depopulated, as it alone furnished fifty or sixty per cent. of the total death list. It seems at a first glance that as it was the most uncleanly part of the city the fever was necessarily more severe there; still, although this may have had a bad effect, there was a square near the district, which, although thickly populated by a poor class of people, *did not have a single case*, and the people who lived there were not exempted by a previous attack either. There is one thing which very probably had a bad effect on the patients in this district. The levee is under the line of bluffs; a tropical sun poured down its rays, and the hills shut off the breeze. The houses were ill ventilated, and crowded with raftsmen, boatmen, etc., and sometimes in mounting to the second story to see a batch of patients it was not uncommon to find the thermometer 110 degrees under one of the roofs, innocent of anything like a ceiling under it. That a great many *burned up* there is no doubt, as the ignorant but well meaning nurse would not consult the thermometer when piling on the blankets. Often when the physician arrived he would have to unwind three or four blankets before he could see his patient. The majority of physicians did not indorse the sweltering process, but we had some ignorant physicians as well as nurses. Imagine one of them writing a prescription thus: *Five cents* worth of Epsom Salts *to be taken immediately;* and that drug stores sold the drug at five cents a pound. We had all types of the fever which were known, and some combinations rarely, if ever, met with before. The different type of fever, as observed by Dr. Lyons, of Dublin, in the epidemic of 1857, were five in number; 1st. The algid; 2d. the sthenic; 3d. the hemorrhagic; 4th. the purpuric; 5th. the typhous form. The algid is the most suddenly fatal type. "The patient, while in the enjoyment of his usual health, and in the midst of his usual occupation, feels suddenly the effects, as it were, of a sudden blow from a heavy bar on the back, and falls down while walking or standing and dies within a few hours in profound collapse, and after exhibiting more or less of the other symptoms of this fever." The countenance became sunken, the eyes looked dull and filmy, the face and trunk presented a dirty, livid hue, and the surface was dotted with points of venous congestion, and hemorrhagic spots or patches like purpura broke out here and there. In severe cases the tongue and breath were cold. In the sthenic form, the symptoms of an inflammatory condition of the system, severe headache, rheumatic pains in the back and limbs, a high, full and hard pulse, flushed face, and throbbing in the temples were present.

The hemorrhagic type was characterized by effusions of blood from various organs and tissues, "the hemorrhage never being single nor from any one source or organ only." Very often the patient bled from the gums, nose, eyes, ears, or even the blood would ooze from the wrists or various parts of the body.

In the purpuric form the body presented the appearance of a mottled surface, caused by the coloring matter of the blood being ejected by subcutaneous effusions in irregular spots or patches.

The typhous form was generally the sequel of the other forms; in some cases the symptoms pointed to the stupor of typhus, nervous prostration and other typhoid symptoms.

The meningital form was a combination of meningital and typhus ictorodal symptoms, and was denoted by the contortions of the patient making the body assume a hoop-like form, the belly curved outward and the head bent back.

Consensual singultus accompanied the disease a great deal, but it is not a type at all, only a combination of hiccough with other symptoms. It was a very fatal sign.

The most prevalent type was the sthenic. Eighty-five per cent. were of this character, about eight per cent. were of the purpuric, five of the hemorrhagic, while about only 2 per cent. of the total cases were of the algid, or partaking thereof. Among the negroes it was invariably purely sthenic. The run of the disease in Vicksburg, as an epidemic, was about from August 22 to October 30. It then dropped down to nothing almost, two or three deaths a day, and so continued until the date of the last death, November 22.

Table of Classified Deaths from the First to the Last of the Epidemic in Vicksburg.

DATE.	White.	Black.	Male.	Female.	Adults.	Children.	Total.
August 9	1	..	1	..	1	..	1
.. 10	1	..	1	..	i	..	1
.. 12	2	1	2	1	3	..	3
.. 17	4	..	3	1	3	1	4
.. 18	1	..	1	..	..	1	1
.. 19	6	.	5	1	6	..	6
.. 20	8	..	5	3	5	3	8
.. 21	16	3	14	5	11	8	19
.. 22	12	..	8	4	10	2	12
.. 23	10	2	8	4	11	1	12
.. 24	13	2	9	6	11	4	15
.. 25	19	6	17	8	19	6	25
.. 26	17	5	18	4	17	5	22
.. 27	17	5	16	6	16	6	22
.. 28	12	4	15	1	13	3	16
.. 29	11	5	13	3	13	3	16
.. 30	11	2	10	3	8	5	13
.. 31	9	1	7	3	9	1	10
September 1	11	9	14	6	15	5	20
.. 2	16	4	12	8	16	4	20
.. 3	22	14	34	2	31	5	36
.. 4	17	9	17	9	21	5	26
.. 5	28	12	27	13	33	7	40
.. 6	28	12	23	17	30	10	40
.. 7	25	9	24	10	26	8	34
.. 8	24	13	29	8	29	8	37
.. 9	29	12	25	16	27	14	41
.. 10	25	16	33	8	33	8	41
.. 11	20	7	17	10	21	6	27
.. 12	8	6	7	7	9	5	14
.. 13	25	11	22	14	26	10	36
.. 14	16	7	14	9	13	10	23
.. 15	4	7	8	3	7	4	11
.. 16	19	4	18	5	16	7	23
.. 17	18	5	15	8	17	6	23
.. 18	10	..	6	4	7	3	10
.. 19	11	7	9	9	14	4	18
.. 20	6	1	5	2	4	3	7
.. 21	5	3	6	2	5	3	8
.. 22	2	4	5	1	3	3	6
.. 23	4	4	5	3	5	3	8
.. 24	4	.	3	1	2	2	4
.. 25	6	5	4	7	4	7	11
.. 26	13	2	10	5	8	7	15
.. 27	12	4	9	7	8	8	16
.. 28	8	4	12		7	5	12
September 29	5	1	4	2	5	1	6
.. 30	14	1	12	3	9	6	15
October 1	5	2	3	4	4	3	7
.. 2	9	1	9	1	9	1	10
.. 3	4	..	3	1	2	2	4
.. 4	6	1	3	4	5	2	7
.. 5	3	3	4	2	5	1	6
.. 6	2	.	..	2	1	1	2
.. 7	4	2	5	1	3	3	6
.. 8	3	3	5	1	3	3	6
.. 9	3	1	2	2	4	..	4
.. 10	4	2	5	1	4	2	6
.. 11	7	3	7	3	3	7	10
.. 12	2	2	2	2	2	2	4
.. 13	3	..	2	1	1	2	3
.. 14	6	1	4	3	3	4	7
.. 15	2	2	4	..	..	4	4
.. 16	2	1	2	1	3	..	3
.. 17	4	..	2	2	2	2	4
.. 18	3	..	2	1	2	1	3
.. 19	2	1	2	1	2	1	3
.. 20	3	..	2	1	3	..	3
.. 21	1	1	1	1	2	..	2
.. 22	3	2	4	1	3	2	5
.. 23	5	1	4	2	4	2	6
.. 24	1	.	1	..	..	1	1
.. 25	6	1	4	3	4	3	7
.. 26	3	..	2	1	2	1	3
.. 27	1	..	1	..	1	..	1
.. 28	4	..	3	1	1	3	4
.. 29	3	..	1	2	2	1	3
.. 30	1	..	1	..	1	..	1
.. 31	..	1	1	..	..	1	1
November 1	1	..	..	1	1	..	1
.. 2	2	1	2	1	3	..	3
.. 3	1	..	1	..	..	1	1
.. 4	2	1	3	..	2	1	3
.. 5	1	..	1	..	1	..	1
.. 7	..	2	2	..	2	..	2
.. 11	1	..	..	1	..	1	1
.. 15	..	1	..	1	1	..	1
.. 16	1	..	1	..	1	..	1
.. 17	..	2	..	2	2	..	2
.. 20	1	..	1	..	..	1	1
.. 22	1	..	1	..	1	..	1

Total whites	721	Total female	303
Total blacks	267	Total adults	703
Total male	685	Total children	285

Grand total..988

CASES.

Whites (estimated)...........3,500 | Blacks (estimated).............3,000

Grand total (estimated) 6,500

During the last part of the epidemic the Howard Association of Vicksburg ordered a sanitary census of the city, and men, well acquainted with the localities assigned them, were appointed canvassers. The fever was not entirely gone, but it was thought best to traverse the field while information sought was fresh in the minds of the people. But the public were disappointed at the incompleteness of the recapitulation, and while the ones employed did their duty, in gathering all the information they were after, still the result, as a whole, was little better than an estimate, especially as regards the First and Third Wards. Owing to fortuitous circumstances, the information in the Second Ward is very accurate, but as they dealt only with the city proper, a great deal of ground in this locality was uncanvassed. For instance: The boundary line of the city was in one instance a long street, and only one side of the street was canvassed, the other being outside the limits proper. In the suburbs are a great many inhabitants who should be considered, during the epidemic, at least, citizens of Vicksburg, but were not so counted in the census. The poorer class of these, particularly the blacks, buried their own dead, and the City Sexton, therefore, did not possess such records. Some few in the foregoing mortality table were from these districts, and therefore put down as residents of the county. On account of the statistical information they furnished I did not separate them from Vicksburg proper, and can safely say that with them the death list is not as large by one hundred as it would be if a record had been kept of the unknown dead who were buried in at least three suburbs to my certain knowledge. I estimated the correct death list of Vicksburg and environs at 1085 deaths, of which we have 988 classified; 6500 cases is the lowest estimate I can count on, to the best of my knowledge and belief. I have not sat down idly and estimated, but the basis of my calculation is the fact that I have, in person, visited every locality within a radius of three miles of the city in search of true figures.

I here append the report of J. D. Tinney, Esq., who had the census in charge:

REPORT OF J. D. TINNEY.

VICKSBURG, Miss., November 4, 1878.

Mr. J. H. Stack, Director Howard Association:

I have the honor to herewith submit to you, and through you to the honorable Association which you represent, the recapitulation of the census of Vicksburg, just completed. The work is as complete as it possibly could be made under the circumstances, but is still very incomplete. Those engaged in gathering the information desired found it impossible to get anything like a correct list of those who left, whole neighborhoods being absent, and those in adjacent neighborhoods who remained had not sufficient acquaintance with the absentees to furnish the information sought for. Under the head of "number left the city," it will be discovered that many of the families generally supposed to be very well known are unrecorded there. The number of cases and the number of deaths is also incomplete, particularly in the First and Third Wards, where the fever began its work, in many instances whole families having died; in other instances the families, with the exception of very young children, were all dead. The children left, in most of such cases, were just able, and no more, to repeat parts of their own names in reply to any and all questions, regardless of relevancy. Another large class in the First and Third Wards whose names, so far as our census is concerned, must go unrecorded, were the lodgers of the numerous lodging houses on the levee, and on the two or three streets immediately east of the levee.

Of the omissions under the head of "number left the city," I think the greatest number are, when present, residents of the western part of the Third Ward and of the Fourth Ward.

I have the honor to be, yours, etc., JOHN D. TINNEY.

FIRST WARD.

Number left city	333
Number cases	804
Number died	141
Population, males	841
Population, females	846
Population, white	1084
Population, black	583

SECOND WARD.

Number left city	356
Number cases	1592
Number died	151
Population, males	1095
Population, females	1569
Population, white	1252
Population, black	1512

THIRD WARD.

Number left city	158
Number cases	1892
Number died	254
Population, males	1352
Population, females	1469
Population, white	1266
Population, black	1555

FOURTH WARD.

Number left city	381
Number cases	1673
Number died	190
Population, males	1209
Population, females	1452
Population, white	1196
Population, black	1465

RECAPITULATION.

Total number left city	1228
Total number cases	5961
Total number deaths	736
Population, males	4497
Population, females	5336
Population, whites	4798
Population, blacks	5115

This closes Vicksburg, and as to other points I will only make casual mention. I have endeavored by great exertion to get statistics from all points in the Mississippi Valley, but have not been rewarded by success. It would be a good year's work to procure and classify reports from this vast section, and beyond a tolerable reliable table of cases and deaths, I can give no more information. So I will close the summary of the history with the following tables of cases and deaths, from all points, during the year 1878. Where the figures are given they are official; where they are estimated they are so denoted;

Tabular Statement of Cases and Deaths from Yellow Fever in 1878.

LOCALITY.	Cases.	Deaths.
New Orleans, La	18,576	4,046
Memphis, Tenn	15,000	5,130
Grenada, Miss., and vicinity	1,492	407
Holly Springs, Miss., and vicinity	1,300	352
Jackson, Miss., and vicinity	490	84
Vicksburg, Miss., and vicinity	6,500	1,088
Warren county, Miss	1,300	116
Port Gibson, Miss., and vicinity	1,349	295
Greenville, Miss., and vicinity	1,355	389
Canton, Miss., and vicinity	1,000	280
Bay St. Louis, Miss., and vicinity	546	83
Meridian, Miss., and vicinity	382	86
Osyka, Miss., and vicinity	370	61
McComb City, Miss., and vicinity	368	55
Lake Station, Miss., and vicinity	300	88
Biloxi, Miss., and vicinity	216	56
Dry Grove, Miss., and vicinity	203	50
Pass Christian, Miss., and vicinity	201	27
Lebanon Church neighborhood	192	44
Hernando, Miss., and vicinity	179	75
Bolton, Miss., and vicinity	168	54
Mississippi City and vicinity	170	20
Haynes Bluff, Miss., and vicinity	160	19
Water Valley, Miss., and vicinity	175	63
Rocky Springs, Miss., and vicinity	127	39
Stoneville, Miss., and vicinity	110	80
Handsboro, Miss., and vicinity	110	15
King's Point, Miss., and vicinity	106	6
Ocean Springs, Miss., and vicinity	86	28
Sunflower Landing, Miss., and vicinity	48	15
Logtown, Miss., and vicinity	40	9
Cayuga, Miss., and vicinity	38	9
Duck Hill, Miss., and vicinity	36	14
McNairy Plantation, Miss., and vicinity	36	9
Garner Station, Miss., and vicinity	31	13
Valley Horn, Miss., and vicinity	29	17
Winona, Miss., and vicinity	27	9
Senatobia, Miss., and vicinity	26	7
Friar's Point, Miss., and vicinity	25	7
Winterville, Miss., and vicinity	24	9
Terrene, Miss., and vicinity	21	19
Yazoo City, Miss., and vicinity	17	9
Pascagoula, Miss., and vicinity	17	4
Lawrence, Station, Miss., and vicinity	16	5
Cox's Landing, Miss., and vicinity	12	4
Terry, Miss, and vicinity	10	5
Scattered cases in Mississippi	16	6
Chattanooga, Tenn., and vicinity	693	197
Brownsville, Tenn., and vicinity	844	212
Grand Junction, Tenn., and vicinity	210	82
LaGrange, Tenn., and vicinity	152	37
Summerville, Tenn., and vicinity	151	56
Martin, Tenn., and vicinity	126	34
Collierville, Tenn., and vicinity	121	48
Paris, Tenn., and vicinity	118	28
Nashville, Tenn., and vicinity	96	18

Tabular Statement of Cases and Deaths from Yellow Fever.—Continued.

LOCALITY.	Cases.	Deaths.
Germantown, Tenn., and vicinity	81	45
Moscow, Tenn., and vicinity	75	33
Mason, Tenn., and vicinity	64	27
Raleigh, Tenn., and vicinity	64	18
Frayser Station, Tenn., and vicinity	46	20
Erin, Tenn., and vicinity	38	10
Bartlett, Tenn., and vicinity	35	23
Milan, Tenn, and vicinity	26	11
Williston, Tenn., and vicinity	16	11
Withe Depot, Tenn., and vicinity	16	7
Galway, Tenn., and vicinity	13	8
McKenzie, Tenn., and vicinity	14	4
Jackson, Tenn., and vicinity	8	3
Other localities in Tennessee	30	17
Baton Rouge, La., and vicinity	2,716	201
Thibodeaux, La., and vicinity	1,898	79
Donaldsonville, La., and vicinity	1,373	179
Plaquemine, La., and vicinity	1,000	117
Labadieville, La., and vicinity	760	150
Morgan City, La., and vicinity	540	108
La Fourche Crossing, La., and vicinity	495	39
Tangipahoa, La., and vicinity	278	69
Bayou Sara, La., and vicinity	250	13
Gretna, La., and vicinity	210	60
Clinton, La., and vicinity	187	43
Delhi, La., and vicinity	168	34
Paincourtville, La., and vicinity	159	13
Delta, La., and vicinity	200	51
St. Gabriel, La., and vicinity	132	38
Port Hudson, La., and vicinity	64	12
Richoc, La., and vicinity	62	18
Port Eads, La., and vicinity	62	14
Point Pleasant, La., and vicinity	60	13
Berwick City, La., and vicinity	50	1
St. James, La., and vicinity	36	4
Tallulah, La., and vicinity	33	3
Harrisonburg, La., and vicinity	30	10
Canaan Landing, La., and vicinity	28	6
South West Pass, La., and vicinity	26	8
Omega, Raleigh, Goodrich, Henderson Landing, La.	116	22
Other localities in Louisiana	63	28
Mobile, Ala., and vicinity	300	80
Decatur, Ala., and vicinity	187	51
Tuscumbia, Ala., and vicinity	119	31
Florence, Ala., and vicinity	138	50
Other localities in Alabama, principally refugees	8	4
Hickman, Ky., and vicinity	475	180
Louisville, Ky., and vicinity	126	34
Bowling Green, Ky., and vicinity	50	26
Other localities in Kentucky, principally refugees	15	6
Hopefield, Ark., and vicinity	127	9
Helena, Ark., and vicinity	77	9
Other localities in Arkansas	25	14
Carried by refugees to Northern and Western States and points on Ohio river	380	150
Refugees, who never spread the disease in the sections they were in	129	64

The foregoing tables show as a grand total the following:

Total number of cases in the United States	69,187
Total deaths in the United States	16,296

This shows an average death rate of 25 per cent. As the majority of the reports are estimates, they have been made as fairly as possible. The true figures are over this exhibit, certainly not under. What the correct tables are, no one will ever know, as records have not been kept, and the horrors of the plague are not fresh in the minds of people, who six months ago could have given very correct information. This ends the subject of figures.

I publish, in full, the report of the Homœopathic Yellow Fever Commission, being impelled to do so by the letters of inquiry I have received from distant parts of the United States and Canada. To the largest proportion of my patrons, it is a matter of great interest, and as only a limited number were printed, I gained the consent of the chairman, Dr. W. H. Holcombe, to give it to the readers of this work also. I therefore let it follow the synopsis of history, and publish it in full:

SPECIAL REPORT OF THE HOMŒOPATHIC YELLOW FEVER COMMISSION, ORDERED BY THE AMERICAN INSTITUTE OF HOMŒOPATHY, FOR PRESENTATION TO CONGRESS.

HISTORY OF THE COMMISSION.

To the President and Congress of the United States:

The yellow fever of 1878 excited extraordinary interest throughout the United States. It began with a malignancy not witnessed since 1853; it attacked all classes, but little children with peculiar violence; it spread rapidly in all directions; it visited many places where it had never been seen before. Pursuing refugees along the line of rapid travel, it appeared at Louisville, Cincinnati, St. Louis, Chicago, New York, and even in country villages, and amid the quietude of summer retreats.

No previous epidemic ever created such a panic. People fled before the pestilence like leaves before the wind. Many villages and towns were almost deserted. City quarantined against city, town against town, even house against house. Rumor and the sensational press exaggerated what was already terrible enough. The selfishness and cowardice of human nature was sometimes painfully manifested. Friend deserted friend, brother fled from brother. Even parents abandoned their children—little ones were found dead in their beds with their shoes on, having died unattended and alone!

The noble instincts of man now came to the rescue. Instances of courage, sacrifice, and self-immolation multiplied on all sides. Heroes, male and female, rushed to the front from all quarters, and stemmed the tide of demoralization. A sympathetic thrill passed through the heart of the nation. Money, provisions, clothing, assistance in every shape were presented to the sufferers, and a magnificent stream of bounty flowed through the organized charities of the South, until there was no man, howsoever poor, white or black, who could not obtain, on call, his doctor, his nurse, his champagne and brandy to revive him, or a decent burial when dead.

While the epidemic was still raging and the public mind still excited, and harrowed by its details, inquiries arose and passed from mouth to mouth: How can these horrible visitations be prevented? What is yellow fever? Where does it originate? How does it spread? What can be done to stop its career? These questions have occupied the medical mind for a century or more—and the books, pamphlets, monographs and discussions on every point of interest connected with yellow fever have accumulated into an immense library—and all without any satisfactory results having been attained. But the practical mind of the American people demanded renewed investigations larger and wider observations, more concerted actions, and it will not rest satisfied until some plan is discovered to protect us from such a fearful scourge.

The first issue of this popular agitation was a Yellow Fever Commission, instituted and suggested by a wealthy and high-minded lady of New York, Mrs. Elizabeth Thompson, who called to her aid Dr. Woodworth, of the U. S. Marine Hospital Service, for the execution of her plan, and offered to pay all the expenses connected therewith. A commission composed of three distinguished allopathic physicians and Col. Hardee, an eminent scientist of New Orleans, was thus appointed, and proceeded to the various infected towns and cities, to collect facts and statistics and throw as much light as possible upon the yellow fever problem. The partial report made by this Commission to the American Public Health Association, held at Richmond, Va., Nov. 19, 1878, was unsatisfactory to the profession and the public. They seemed to have gone over the same old ground, to have collected similar masses of contradictory evidence, and to have agreed upon nothing, except that yellow fever is an exotic, and can be kept out by an efficient quarantine, a position long and still disputed by one-half of the medical profession.

At the announcement of this Commission, Dr. T. S. Verdi, an eminent homœopathic physician of Washington, D. C., informed of the great success of the homœopathic treatment in this fatal disease, and satisfied that the Woodworth (allopathic) Commission would neglect investigation into the therapeutics of the disease, suggested a Homœpathic Commission that would cover the whole ground. His plan met with great favor, and Dr. Conrad Wesselhoeft, of Boston, President of the American Institute of Homœopathy, the oldest national medical association in America, composed of over one thousand legally educated physicians, was requested to appoint the Commission aforesaid, and did appoint the following named gentlemen (seven of whom were yellow fever experts), to act as a Yellow Fever Commission:

WM. H. HOLCOMBE, M. D., of New Orleans, *Chairman.*
T. S. VERDI, M. D., of Washington City, *Secretary.*
BUSHROD W. JAMES, M. D., of Philadelphia, Pa.
W. L. BREYFOGLE, M. D., of Louisville, Ky.
J. P. DAKE, M. D., of Nashville, Tenn.
E. H. PRICE, M. D., of Chattanooga, Tenn.
F. H. ORME, M. D., of Atlanta, Ga.
L. A. FALLIGANT, M. D., of Savannah, Ga.
LUCIUS D. MORSE, M. D., of Memphis, Tenn.
W. J. MURRELL, M. D., of Mobile, Alabama.
THOMAS J. HARPER, M. D., of Vicksburg, Miss.

The believers in the homœopathic system of medicine constitute a great and growing power, comprising a large share of the wealth, intelligence and tax-paying element in the United States, especially in the northern part of the country. The seven thousand practitioners of this system, with their "clientele" of several millions, watched with intense interest the fight which their few Southern brethren were making against the terrible malady, and Mrs. Elizabeth Thompson, hearing of this new and important investigation, with her accustomed liberality and desire to do the greatest good, at once came forward and offered to pay the expenses of this Commission.

The field of labor appointed to this Commission was something different from that occupied by the Allopathic Commission. That body busied itself mainly in considering the cause, propagation and prevention of yellow fever, giving but little attention to the treatment of the disease. True, the circular letter sent to physicians made a short inquiry about the treatment, but the answers were no doubt so contradictory, and the results so unsatisfactory, that the Commission made no report on the subject to the American Public Health Association, and will probably make none in the more elaborate report preparing for Congress. Moreover, if the Commission had reported upon the treatment of yellow fever, the returns of homœopathic physicians would have been probably ignored and rejected, as was done by the Commission of 1873, which investigated at the public expense the treatment of Asiatic cholera. We have learned to distrust the impartiality of allopathic physicians and army and navy surgeons,—and the homœopathic party, if we may be allowed the expression, is getting too strong in the United States to allow any more public medical work to be done without having a fit representative to assist in doing it.

The Homœopathic Commission considered the treatment of the disease, and the comparative results of different methods, as objects of supreme interest to the great public who suffer by the scourge, and the question of cause, propagation and prevention, as of comparatively subordinate value. The cry for something to be done to mitigate the severity and diminish the mortality of yellow fever is sharp and imperative, whilst the other problems are compelled to wait long and patiently upon the tedious processes of observation and experiment. Therapeutics first, and prevention afterwards, was the motto. To discover and verify a method of making yellow fever a light and manageable disease would do more than anything else to allay popular apprehension, prevent panics, and maintain social and commercial intercourse in their accustomed order.

The Commission began its work by issuing the following circular letter, a copy of which was mailed to every homœopathic physician practicing in the yellow fever districts of the South:

CIRCULAR LETTER.

Dear Doctor—We have been appointed by the President of the American Institute of Homœopathy a Commission to investigate the results of Homœopathic treatment in the late epidemic of yellow fever, with a view of laying the report before Congress, and getting that body to publish the same, as a supplement to the report of the Yellow Fever Commission, now at work upon its cause and means of prevention.

The physicians of our School have done gloriously in the late epidemic, having, we firmly believe reduced the mortality of yellow fever to less than one-half of the acknowledged allopathic loss. We have much to say about the treatment of yellow fever which it behooves not only the medical profession, but the people of the United States, to listen to and believe. Our reports are denied publication in the Allopathic journals. The great majority of the medical profession itself is ignorant of the vast advances we have made in behalf of science, truth and humanity. We have endeavored, in vain, to awaken the conscience and enlighten the mind of the Old School on this subject. We intend to gather our statistics in the most careful and scientific manner and lay them before Congress, as matters of vital importance to the health, welfare and prosperity of the Nation.

We invite your cordial co-operation in this work. We beg you to throw aside all indifference, sloth, business cares, prejudice and personal feelings, and aid the Commission by consulting your books, records and memories, giving us the facts required.

1. How many cases of yellow fever have you treated this year?—genuine, unmistakable cases, the diagnosis of which you would be willing to submit for criticism to the most accomplished yellow fever expert.

Give, if possible, a list of your cases, with names, dates, addresses, etc. This is done so that we may have the data ready to verify our claims, and to challenge the scrutiny of the incredulous and a comparison with the best allopathic results.

2. How many deaths occurred in your practice? Please give the whole number, including all those who came to you at the last hour, or who relapsed, or who committed fatal imprudences. All of us can *explain away* a number of our deaths, thus shifting the responsibility from our own shoulders; but allopathic physicians can do the same thing; and no just ground of comparison can be obtained unless each physician reports the exact number of patients who died under his hands.

If any physicians, as sometimes charged, have reported inadvertantly, by faulty diagnosis, or for other reasons, cases as dying of meningitis, hemorrhage, congestion of the brain, malarial fever, etc., which were really yellow fever cases, we implore them now to correct the error, and to charge to our practice every single death which may be fairly attributable to it. We are not seeking to glorify Homœopathy or ourselves, but to discover the truth for the common benefit. If Homœopathy has made a better record than Allopathy, we want the profession and the world to know it; if the reverse is true, we wish to be undeceived ourselves and turn allopaths.

So anxious are we that our system should bear its full responsibility, we beg you to assume as your own loss, any death which took place within thirty-six hours after you handed the case over to an allopathic physician; and on the other hand, to report no case as your own which came into your hands from the old school in a helpless condition.

3. Please state the number of recoveries after black vomit.

4. Please state the number of children under 15 years whom you attended, and the percentage of loss. Also the number of colored persons and the percentage of loss.

5. Please state how many times you lost more than *one* patient in the same family or same house.

6. Please state your favorite remedies or measures to reduce the high temperature of the first stage, with dose, etc.

7. Please state your best remedies or measures for the second stage, especially for vomiting.

8. Please state your treatment of the third or collapsed stage.

9. Please give your ideas as to diet and general hygienic regulations.

10. What did you do for the pervigilium and restlessness so peculiar to the disease?

11. What did you do for the hemorrhagic symptoms, including black vomit?

12. What did you do for suppression of urine?

13. What external measures did you find useful?

14. To what extent did you avail yourself of allopathic or eclectic means not included in the above answers?

15. Give any other information or suggestions which may seem to you important, relating to temperature, pulse, new features, causes, etc.

16. Give briefly statements of treatment and results, with homœopathic medicines, in former years.

If every physician of our school will fully and freely answer these inquiries, putting his whole heart and mind into the matter, we can accumualte an immense mass of facts which will render incalculable service to our glorious cause.

It is distinctly understood that in making our report all names of physicians are to be ignored, each physician casting his facts with a common stock, and sharing equally with all the advantage or disadvantage of the total result.

WM. H. HOLCOMBE, M. D., *Chairman.*

T. S. VERDI, M. D., *Secretary.*

The Commission met on December 2d, 1878, at the St. Charles Hotel, in the city of New Orleans, and found that the profession generally had given them a very cordial and satisfactory response. It received 37 letters from medical gentlemen, containing information, reports and suggestions of varied value. It received 24 returns in answer to the circular letter from practitioners who had served more or less arduously through the late epidemic, and 7 returns from physicians who had practiced homœopathically in former visitations of yellow fever. It received also several elaborate papers on the causes and prevention of the disease, which elicited lengthy and instructive discussion.

There were three distinct sources of information upon which the Commission relied:

1st. Written reports of physicians, personal interviews with them, discussion and comparison of ideas as to the plan of treatment and effect of remedies.

2d. Examination of the records of boards of health and other public institutions, and the general literature of the disease, both past and present.

3d. Reading and discussion of papers presented, and conversations with intelligent and trustworthy citizens as to the origin, spread and diversity of the disease, and the comparative value of different modes of treatment.

After exhausting the field in New Orleans the Commission broke into sections and pursued the same line of inquiries in the smaller cities of Vicksburg, Mobile, Jackson, Memphis and Chattanooga, each of which had been more or less scourged by the yellow fever. The members of the Commission were received everywhere in the most friendly and accommodating spirit by the press, the faculty and the public. The numerous facts thus gathered have been duly arranged, compared, classified and condensed until we deduce from them the following report, which, for clearer presentation, we divide into three heads:

I. *Statistics Showing the result of Homœopathic Treatment, and a Comparison with that of the Old School.*

II. *Nature of the Treatment, and Comparison with the Methods and Remedies of the Old System.*

III. *The Opinions of the Commission on the Causes and Prevention of the Disease.*

SATISTICS SHOWING THE RESULT OF HOMŒOPATHIC TREATMENT AND A COMPARISON WITH THAT OF THE OLD SCHOOL.—It was long thought that "figures cannot lie." Some philosophers now go to the other extreme, and assert that "anything can be proved by figuring." The truth, as it generally does, lies in the middle ground. The numerical method has been abused and overrated; but applied in a careful and scientific manner, its results are sometimes exceedingly valuable. Statistics may not yet be an exact science, but only a science of probabilities—and yet we have so little exactitude in this world, that when a system of practice has *very strong probabilities* in its favor, we begin instinctively to suspect that it is a good one.

Figures increase in argumentative value as they increase in numbers. A few statistics are worth positively nothing; a great accumulation of facts, skillfully analyzed and compared, may lead us to definite results, to purer principles, and to natural laws. The great institution of life insurance is based on this fact. It is impossible to predict the longevity of this or that man; but of a thousand men now thirty years of age, we know that a certain number will be alive in ten years, a certain diminishing number in twenty years, and so forth. This fact has only been discovered by the accumulation and study of a vast number of observations on human longevity.

The law of statistics is thus formulated by an able writer:

"The influence of minor causes of disturbance diminishes as the area of investigation increases, until, if the basis be sufficiently extended, one is justified in disregarding them altogether."

Now apply this to medicine. We can learn nothing from the experience of any one man, at one place, and in one epidemic, because "minor causes of disturbance" are innumerable. A physician may treat two hundred cases in an orphan asylum with only one death, and then lose ten cases out of twenty in private practice—and vice versa. The comparison of the practice of any two physicians amounts to nothing One man may lose five out of his first ten cases, and be a far better physician than one who loses only one case in the first fifty. Such minor disturbances as the difference in the class of patients, the age, the race, the surroundings, the nursing the locality, the severity of attack, the variation in constitutions, etc., etc., make it impossible to come to any conclusion from comparing small numbers of cases—either of physicians of the same or different schools But when the "area of investigation increases"—when we get the reports of ten or twenty physicians, with a large number of cases, drawn from different localities, and made at different times or in different epidemics, and compared with correspondingly large figures of as many or more physicians of another school, then we have a "basis sufficiently extended" for us to disregard all the "minor disturbances" which make the differences between any two physicians, and we arrive at a point where we may strike some just average with every degree of probability.

The essential point is to get statistics which are thoroughly reliable. This we endeavored to do by the earnest appeal of our circular letter, and by such constant supervision as we could fairly make over the returns. For fear some physicians, who had been less fortunate than others, having experienced some of those "minor disturbances" above mentioned, should withhold their reports, we promise to give no names in our statistics, so that no invidious comparison between individuals could be made by friends or foes. It is almost incredible that some persons were so stupid as to take umbrage at this just measure, and to charge this Commission with a desire to appropriate the merit of others to themselves.

We regret to say that six physicians of New Orleans, who use homœopathic remedies, refused to make their reports to the Commission appointed by the American Institute of Homœopathy, and preferred identifying themselves with a very small Relief Association, which had enjoyed only a local and doubtful celebrity. Their reasons for so reporting to a non-medical body were neither satisfactory to the Commission nor creditable to themselves. We obtained the number of their losses from the Board of Health, and could have calculated the number of their cases, on the basis of the same relative success which followed all the other practitioners of our School, but preferred not to swell our figures, already sufficient for our purposes, by impressing numbers into our service so discourteously withheld.

On analyzing the reports handed into us we ascertained the following facts:

We have here 1945 cases of yellow fever treated homœopathically in the city of New Orleans, with a loss of 110 patients, a mortality of 5 6-10 per cent.

We have 1969 cases of yellow fever treated in cities and towns outside of New Orleans, with a loss of 151 patients, a mortality of 7 7-10 per cent.

This makes a total of 3914 cases of yellow fever treated homœopathically during the epidemic of 1878, with a loss of 261 patients, a mortality of 6 6-10 per cent.

We have moreover reports of 555 cases treated homœopathically in the great epidemic of 1853, with a loss of 33 patients, a mortality of 6 per cent.

Also, reports of 2100 cases treated during the several minor and much milder epidemics which occurred between 1853 and 1878, with a loss of 66 patients, a mortality of 3 7-10 per cent.

Making a grand total of 6569 cases treated by homœopathic physicians, with a loss of 360 patients, a mortality of 5 4-10 per cent.

The number of cases reported as occurring in 1878, among negroes, including mulattoes, was exactly 900—with a loss of 27 patients, a mortality of 3 per cent.

Some physicians did not distinguish between their patients as to race or color. The number distinctly reported as white was 2299, of whom 194 died, a mortality of 8 4-10 per cent. This includes the returns from points like Memphis and Chattanooga, where the fever was very malignant and the mortality very great. In four of the New Orleans reports 1076 patients are described as being white, of whom 66 died, a mortality of 6 1-10 per cent.

The number of cases distinctly reported as colored in the city of New Orleans was 107, of whom 3 died, a mortality of a little less than 3 per cent.

The total number of cases reported as being under 15 years of age is 1089, of whom 48 died, a mortality of 4 4-10 per cent.

The total number of recoveries after black vomit was 125. This dreaded symptom, formerly considered so fatal, has been growing less and less so since the epidemic of 1853, and a great many recoveries have been recorded during the late visitation by gentlemen of both schools. Children seemed to have it more frequently in proportion to numbers, and to recover from it more readily than adults. We must not forget that there are various shades and degrees of black vomit. Blood more or less blackened by the acids in the stomach may have been quite healthy when exuded from the mucous membrane of that organ, and be far less prognostic of danger than that sooty, coffee-ground substance, the genuine black vomit, which shows under the microscope a chemical destruction and disintegration of the blood globules.

Among these returns are nine papers to which we attach especial value. These comply fully with the request of the circular letter, to give not only cases and deaths, but the name, age and address of every patient attended, so that with these documents in our hands we can verify every statement, and challenge comparison with any member of the Allopathic School who can furnish us with similar accurate data.

These returns exhibit an attendance upon 2010 cases of yellow fever, with a loss of 129 patients, a mortality of 6 4-10 per cent. There were 64 recoveries after black vomit. The number of children under 15 years of age amounted to 828, of whom only 40 died, a mortality of 4 6-10 per cent.

On careful consideration of these reports we discover the following facts:

The fever was more severe outside of the city of New Orleans than in that city; and it was much more severe in places where it had never been before than in those places which it had frequently scourged.

It was far less fatal to the blacks than to the whites, everywhere, but more fatal to them in the smaller cities and towns than in the city of New Orleans.

It attacked children under 15 years of age in extraordinary numbers, that class making up at least one-third of all the cases of yellow fever during the epidemic, and the mortality under homœopathic treatment was exceedingly small.

Recoveries after black vomit and suppression of urine (lasting 24 hours or more), were common, and the most dangerous form of the disease was that in which the poison manifested its baleful influence especially upon the cerebral system.

In answer to the inquiry, "how many times did more than one death occur in the same family or house?" we find that in 1630 cases, with 90 deaths, the sad calamity of two deaths in the same family is reported but six times under homœopathic practice, a fact contrasting most favorably with the repeated instances of plural losses under the old system.

We embrace the opportunity here offered of suggesting why the yellow fever is so much more malignant outside of New Orleans than in that city. It is not because the victims in smaller towns are more panic stricken, and the medical treatment and the nursing are less efficient. These causes have no doubt some little effect, but a more plausible reason is this: that wherever the yellow fever germs always exist, they insensibly modify the whole atmosphere and the constitutions of the people, so as to acclimatize them to that atmosphere. Breathing the air of an infected district is a kind of homœopathic prophylactic, like the taking of small doses of belladonna to prevent or modify an impending attack of scarlet fever. The people who have inhaled that air for years are slow to take yellow fever, and when they do they have it more mildly than the new comer and the stranger.

The people of Grenada, Chattanooga, etc., having never been prepared by that tissue-change of gradual acclimatization by inhaling a yellow fever atmosphere, suffered terribly from the outbreak of the disease, and the total inability of a simply malarial atmosphere to afford such protection or mitigation, is a strong argument that yellow fever is an entirely different disease from the malarial and bilious fevers of this country.

When we come to compare these records with the results of allopathic treatment, we are met at once with serious difficulties. Here are the reports of 24 physicians, hailing from nine different yellow fever localities, embracing nearly 4000 patients, many of them accurately fortified with the name, residence, age, race and color of the victims, and bearing strong internal evidence of truthfulness and reliability. There are no miraculous statements here, no two hundred cases without a single death. Those who live in the towns and cities outside of New Orleans, report heavier losses than in that city. If one doctor seemed to report a very superior success to others, it was because he was in a more favored locality, or had many more negroes or children to treat, among whom the homœopathic loss was very small. These homœopathic physicians were guided by one and the same great therapeutic law, and their ideas, their treatment and their success were remarkably alike.

Now comparisons in medicine to be equitable and instructive, should be made between masses of similar data. We want the reports of 24 allopathic physicians, from nine different localities, embracing 4000 patients, and made with similar accuracy and truthfulness of detail. These we cannot get. The Allopathic School, ignoring the wise remark of Sir Henry Holland, "through medical statistics lies the most secure path into the philosophy of medicine," has been singularly neglectful of this method of discovering the truth. There has never been any concerted movement in this direction on their part. They contribute very little of such valuable material to their own journals, and they are not likely to do it at the request of our School, which they regard as a bastard Ishmael, cast out into the wilderness for the benefit of the orthodox and legitimate Isaac.

In the next place, if we had such reports, we would be puzzled by their diversity and complexity as to the treatment of the disease. We would be comparing homœopathic practice, now with a quinine practice, now with a calomel practice, at one time with the antiphlogistic method, at another with the stimulant method, here with the hydropathic experiments, and there with an expectant or do-nothing treatment. They have no therapeutic law to guide them, no fixity or certainty of principle or practice, constantly shifting their ground and changing their remedies according to the theories and speculations of their leaders. We could help them out of all this trouble, if they would accept our guiding light—but until they do, we are obliged to take their heterogeneous material in a lump, and make a vague comparison between things which are not logically and fairly comparable.

Then, again, we find another difficulty; they have kept no accurate record of their cases. Take Memphis for example. The number of deaths by yellow fever recorded by the Board is 2707—and by the same authority the number of cases is stated at about 6000. Dr. Brown, however, Secretary of the Board, gives the number at 9000, and Dr. Mitchell, of the Congressional Commission, swells it to 14,000. On Dr. Brown's estimate, the mortality at Memphis, by yellow fever, was 30 per cent. of the cases; on Dr. Mitchell's estimate, the mortality was 19 3-10 per cent. Now the total homœopathic mortality was only 16 7-10 per cent.

From Chattanooga, a much smaller field, the statistics are very satisfactory, because very accurate. How malignant the fever was at that point may be inferred from the fact that the mortality among negroes exceeded 10 per cent., and that of the white population rose to 45 6-10 per cent. The allopaths treated 158 white people, with a loss of 81, a mortality of 51 2-10 per cent., while the homœopaths treated 96 white people, with a loss of 35, a mortality of 36 4 10 per cent.

A small hospital opened at Chattanooga for homœopathic patients, received 18 sufferers of the very poor and helpless class, of whom 3 died, a mortality of 16 1-10 per cent. A similar institution for the same class of patients at Louisville, Ky., under charge of Dr. E. O. Brown, received 89 yellow fever cases, and lost 30 of them, a mortality of 32 1-10 per cent, a showing considered by Dr. Brown as very favorable from the allopathic stand-point.

Vicksburg contains between 13,000 and 15,000 inhabitants, a great many of whom fled from the city on the outbreak of the epidemic. The Board of Health has published the names of 920 victims of the disease. It is impossible to obtain the number of cases, but to bring the mortality down as low as 10 per cent., there must have been 9,200 cases; as many people probably as remained in the city. The loss was certainly over 10, probably 20 per cent. The homœopathic mortality was 5 6-10 per cent., and in no city of the South did the homœopathic success make so profound an impression upon the community.

This homœopathic mortality at Vicksburg appears to be at variance with the statement made above, that the fever was more malignant and less manageable in the cities outside of New Orleans than in that city—but when we come to deduct the cases of negroes, of whom the number was unusually large (636 against 107 for New Orleans), we find the mortality among the whites was 11 8-10, and the general law is confirmed.

It is probable that one-half of all the cases, and one-third of all the deaths in the yellow fever zone of this country occurred in the city of New Orleans. The Board of Health has recorded 4,056 deaths by yellow fever, but the mortality was a good deal more, for it is notorious that hundreds of deaths by yellow fever, were reported as malarial hemorrhagic fever, pernicious fever, congestive fever, cerebro-spinal meningitis, etc., etc. The entire number of cases reported by the faculty, after repeated urgings and public solicitations, amounts to 23,540. This would make a general mortality of 17 2-10 per cent. Although some distinguished physicians accept this as very near the truth, others insist that the number of cases should be very greatly increased, and the average mortality correspondingly diminished.

Let us see how the homœopathic reports from New Orleans compare with these allopathic approximations. There were 1,945 cases of yellow fever treated homœopathically, by the physicians who reported to this Commission, with 110 deaths—a mortality of 5 6-10 per cent. Or if we take only the reports of those physicians who gave us full data, name, age, address, etc., of every patient, we have 863 cases, with 50 deaths, a mortality of 5 5-10 per cent.

There is another fact of great importance in showing the superiority of the homœopathic treatment. Of the 4,056 fatal cases of yellow fever reported to the Board of Health, 2,344 of them (more than one-half), were children of 15 years and under. This is a most appalling fact, and one which was never noticed in any previous epidemic. Think of it! 57 per cent. of the victims were children!

Now what is the homœopathic record on this point? We have here reported the cases of 1,089 children of 15 years and under—with 48 deaths, a mortality of 4 4-10 per cent. The same physicians who report 1,089 children, with 48 deaths, make a total summing up of 3,199 cases and 221 deaths. One-half at least of the deaths under allopathic treatment were children. These homœopathic doctors ought to have lost 110 children at that rate—but their loss was only 48: or to confine the question to the homœopathic physicians who had reported the names, age, address, etc., of every patient, these gentlemen attended 828 children with 40 deaths. The same physicians had, however, a total of 129 deaths, and they ought to have lost 65 children instead of 40, if their average loss had been the same as the loss of the Allopathic Schools.

These facts need no comment.

From all these approximations, because there are so many sources of error that we can only call them approximations, we may safely infer that during the last epidemic, in hospital and in private practice, in great cities and in small towns, among whites and blacks, among adults and children, the homœopathic system has been eminently successful, strengthening the faith of its friends, commanding the respect of its enemies, and extending its salutary influence in all directions.

It has been often said by yellow fever experts, that in an epidemic of average severity, 80 cases out of 100 would get well under any system or without any treatment whatever. The whole question of cure centres in the remaining twenty cases. Here unquestionably a medical practice is put to the severest test imaginable. How does homœopathy stand that test? Notwithstanding the possible fallacies of the numerical method, and the possible errors of medical reports, and although some allopathic physicians may have made exceptionably excellent records, and some homœopathic physicians exceptionably poor records; still, surveying the matter on a large scale, in different places and at different times, the work of many physicians and the treatment of thousands of cases, we are compelled to believe that the homœopathic method is uniformly more successful than the method of the old school.

NATURE OF THE TREATMENT AND COMPARISON WITH THAT OF THE OLD SCHOOL.—A full and technical report of the homœopathic treatment of yellow fever and its results will be presented to the American Institute of Homœopathy at its next session; but it seems to us advisable to lay, briefly and plainly, before the President and Congress some reasons for the striking results obtained by the application of the numerical method to the two systems of medicine described in the last chapter.

When we ask how the homœopathic school managed to achieve such distinguished success, we are met at once by the inquiry—Were all these reported cases really cases of yellow fever?

We answer, yes, they were undoubtedly yellow fever cases, and for two excellent reasons, entirely separate from the unquestioned veracity and diagnostic skill of the reporting physicians.

In the first place, it is a law of great epidemics that they displace, absorb or transform all the cognate diseases endemically or sporadically prevailing. When yellow fever poisons the atmosphere, intermittent fever, bilious fever, yea, even croup, dysentery and other local affections frequently disappear or become assimilated to the prevailing type of disease, and pass into yellow fever. Malarial and bilious fevers almost invariably disappear when yellow fever is raging, and their reappearance late in the season is a good sign of the subsidence of the epidemic. This is the reason why great cities scourged by yellow fever epidemics are just as healthy on the long average as cities not so scourged. Their vital statistics show that whilst more die of the epidemic disease, the mortality from sporadic diseases is proportionably diminished.

Secondly, there are no diseases which could possibly be mistaken for yellow fever but malarial and bilious fevers of the congestive and hemorrhagic types. These diseases are very rare in cities or large towns where yellow fever especially prevails. Who does not know that those malarial diseases are so easily subdued by quinine and kindred remedies that they are rarely fatal after their judicious administration? And now we reach the essential point in our argument. Homœopathic physicians in the South are accustomed to the free use of quinine for malarial diseases, believing it to be the best remedy according to the homœopathic law. Especially would they use it in considerable doses for malarial fevers with congestive or hemorrhagic symptoms. Now these physicians treated and cured nearly four thousand cases of an epidemic fever without giving a single grain of quinine to break up or prevent the recurrence of the paroxysm. Does any intelligent allopathic physician believe that those cases were malarial fevers? Would they not have dragged their slow length along with increasing danger of fatal congestions?

Conceding, then, the correctness of the diagnosis—yellow fever—our critics will next inquire, but were all these cases really treated on homœopathic principles? Were not the cures attributable to allopathic interpolations? If the cures were effected by allopathic measures why do not our average losses agree with those of the other school? Why should allopathy be so successful in our hands and so unsuccessful in theirs? Do we practice allopathy itself better than its professed disciples?

But the allopathic interpolations were absolutely insignificant. To the question "To what extent did you avail yourself of allopathic or eclectic measures?" the large majority of our physicians reply, *Not at all.* Some acknowledge the occasional use of an anodyne to produce sleep in cases of extreme wakefulness or restlessness. Some gave a little carbonate of soda for sick stomach, or sulpho-carbolate of soda for black vomiting, or frictions or enemata of quinine in collapse. One applied a blister or two, another gave watermelon-seed tea for suppression of urine, etc., etc. Put the whole together, and ask any intelligent allopathic physician if he would trust a genuine yellow fever case to such allopathic measures alone; and you would get an indignant denial.

In the next place, the foot-baths, the spongings, the enemas, the warm and cold applications, the frictions, the stimulants, the regulations of diet and covering, etc., are neither allopathic nor homœopathic measures. They are not medicines at all, but appliances, based upon a knowledge of physiology and hygiene, and open to gentlemen of all schools. The homœopathists showed themselves faithful students and disciples of nature, not only in their judicious use of these things, but in their uniform advocacy of plenty of fresh air, light covering, cold water, and an abstinence from all debilitating and perturbating treatment, in which they had often to contend with the violent prejudices of the people, long trained in the false doctrines of the old system.

To contrast the treatment of the two schools more thoroughly, we make out a list of the most noted allopathic remedies: Blood-letting, leeching, blistering, calomel, quinine, saline purgatives, antimonials, sugar of lead, bismuth, creosote, turpentine, carbolic acid, capsicum, ether, carbonate of ammonia, iron, musk and strychnine. This list might be largely extended. The allopathic profession is greatly divided in opinion as to the merits of these heroic remedies. Some denounce as useless, or positively harmful, what others consider exceedingly beneficial. There is no harmony of thought or action, no general law which seems to guide them, like a fixed star, through the darkness of theory and conjecture.

On the contrary, when we examine these homœopathic records, we are struck at once with the great similarity of practice among all the physicians, as if they worked together and kept step to the music of some great guiding law. Not one of the above allopathic sheet-anchors is even mentioned. They seem to have a different materia medica. Aconite, Belladonna, Bryonia, for the first stage; Arsenicum, Carbo vegetabilis and Crotalus for the second. What simplicity of method; what unanimity of opinion; what similarity of result!

The great therapeutic question of the first stage is *how to reduce the extremely high temperature*, which, if long continued, will inevitably destroy the integrity of the blood and arrest the processes of nutrition in the molecules of every organ of the body.

The homœopathists deny that blood-letting, purging, sweating and the whole array of antiphlogistic measures can achieve this great object. They simply weaken the patient, not the disease. In mild cases they are not needed; in severe cases they entirely unfit the sufferer for the exigencies of the second stage, which is naturally one of depression and exhaustion.

Distinguished allopathic physicians, disgusted with the above stereotyped but unsuccessful method of managing the intense heat of yellow fever, have repeatedly resorted, and this year more than ever, to cold affusions, ice packs and other hydropathic appliances. The homœopathic school, believing that nature's true plan of reducing a fever is by a gentle perspiration, and that we should imitate her operations, and not oppose, condemn this mode of treatment altogether. It is a method which conducts rapidly away the heat already generated, without having the least influence in diminishing that intense chemical action going on within the body, which is the cause of the heat. It is drawing away the smoke, sparks and radiant heat from the chimney, without attempting to put out the fire on the hearth.

Drugs, of any kind, used in considerable doses, have, by their perturbating action on the system, a decided tendency to increase the heat and distress of yellow fever. The irritation of the whole gastro-intestinal tract by drugs determines the localization of the fever-poison to the mucous membranes of the stomach and bowels, and has been unquestionably a frequent cause of black vomit and collapse. Quinine has no power whatever in reducing the temperature of the yellow fever patient, and its use in a disease totally different in essence from malarial fevers was always a mistaken and disastrous piece of empiricism. Lastly, the allopathic efforts to forcibly reduce the pulse and the temperature by strong doses of veratrum viride, aconite, gelseminum, etc., only hastened the period of collapse by paralyzing the nerve forces of the body, or by exciting the reactionary efforts of nature, tended to produce dangerous congestions.

The homœopathic physician would take one of the same remedies, Aconite, the great homœopathic antiphlogistic, and by giving it in very *small doses frequently repeated,* would equalize the circulation, quiet the nervous system, and reduce the temperature in a gradual and satisfactory manner, without the possibility of doing the least harm. Leaving nature all her strength and her resources unimpaired, he would do the greatest amount of good practicable under the circumstances of each case. The whole secret consisted in selecting the remedy according to the homœopathic law, and in using it in very small doses frequently repeated. The last fact we can best illustrate by saying, that water falling, drop by drop, upon a stone, will make more impression upon it than a thousand times the quantity dashed against it at once.

When the allopathic physician gets his patient into the second stage of the disease, he finds his ammunition exhausted. He positively has no remedies to give, except stimulants and tonics to keep his patient alive, until the morbid influences wear themselves out. It is here that the homœopathist comes in with his specific remedies and gains his greatest triumphs. He has actually more genuinely homœopathic remedies for the second stage than for the first, among them the giants, arsenic, crotalus and carbo vegetabilis. Here too he gives smaller doses and with still better effect. He has more recoveries after black vomit. He checks hemorrhages without the use of that relic of surgical barbarism, the actual cautery which was actually used upon a little child in New Orleans last summer. He restores the secretion of urine without diuretics. He rouses his patient from a deeper collapse, and saves him from the most desperate condition. The action of homœopathic remedies in the second stage of yellow fever frequently reminds us of their similar efficiency in the collapsed stage of Asiatic cholera.

We have thus explained upon rational grounds the difference of success of the two schools as shown in the numerical returns. The homœopathist makes more cases mild by mild treatment, by reserving the strength of his patient, by cautious administration of food, by sound hygienic regulations, and when the second stage arrives, his patient has not been starved and prostrated, and experimented upon until nothing is left for him but champagne and despair, but the physician comes with new remedies and new hopes to the rescue. Many cases would no doubt recover without any medicine at all. A few cases are so malignant in their type that no known treatment would avail. The remainder needing help and salvable, stand their best chances under the homœopathic method.

The range of homœopathic loss, as between different physicians of the school, is very limited, say from five to ten per cent. The range of loss under the diverse and often opposite practices of the old school is very great, from 5 to 20, and 30, and even 40 per cent. The heroic treatment, bleeding, emetics, purgatives, calomel and quinine, to which may be added cold applications in the first stage of the fever, was uniformly the least successful. In proportion as milder and less medicine was given, the patient's prospects of recovery brightened; and the expectant physicians, those who gave little or nothing, approached nearest to the homœopathic success.

During the late epidemic, especially in the more northern part of the field, so slight was the confidence of allopathic practitioners in their therapeutic measures, that they gave no comforting assurances, no hope of life to the panic-stricken people, except in the most precipitate flight from their homes. A wholesale depopulation of cities and villages was recommended by them, endorsed by boards of health and enforced by municipal authorities, when quarantines failed, and the only choice lay between the experimental treatment and a hasty flight.

When the losses of the people by the epidemic are all estimated, in order to impress Congress with the necessity of a national quarantine, how much ought to be charged up to such a palpable want of faith in therapeutics and such consequent and ruinous professional advice?

It was the year of experiment in the Allopathic School. So little confidence had the most intelligent physicians of that school in the theories and methods of the past, that some of them openly declared (and all of them thought) that every yellow fever patient was a legitimate subject for experiment. And from the standpoint of their experience, their position was right. When all known things have failed it is time to try the unknown. But it speaks poorly for their independence of candor, that when they were ready to grasp at therapeutic straws thrown to them by any regular pretender, so few of them extended their experiments in the direction of homœopathy, a system practiced by thousands of physicians educated in their own colleges, and approved and upheld by one-tenth of the people of the United States.

Truth, however, does not always fall upon deaf ears, and sincere and intelligent spirits will sometimes brave the storm of professional rancor and declare their honest convictions that homœopathic remedies have been remarkably successful. We instance Dr. Charles Belot, of Havana—that city "sadly renowned for the number of its victims to yellow fever." Dr. Belot has passed through eighteen epidemics, has treated about a thousand patients annually; has made more than a thousand autopsies of yellow fever subjects, and stands as a yellow fever expert, head and shoulders above the medical men of his time. He has discovered that Aconite, homœopathically administered, is an admirable remedy in the first stage of the fever. Here are his words: "One very good auxiliary, which should never be neglected in resisting local congestion, and to diminish the plasticity of the blood, is the tincture of Aconite: This remedy, given in doses of six drops in twelve ounces of water, administered by spoonfuls every hour, has a truly magical power. The pulse becomes softer, and its frequency diminishes, whilst the heat of skin subsides as perspiration is established. It should never be neglected in the first or congestive period."

Dr. Belot has also discovered that *Arsenic*, pronounced by the concurrent voice of all our physicians to be the best remedy in the second stage, is, in reality, a magnificent remedy in the malignant cases of yellow fever. Hear him again:

"Towards the end of the second period, when the vomiting cannot be arrested, when the patient has continued nausea, when the vomit contains bile or mucosites, filled with blackish or sanguinolent streaks, there is no better remedy than arsenic. Prescribed under fitting circumstances, arsenic often brings unhoped for amelioration."

"As for arsenic, whilst it may be difficult to appreciate its action in theory, its happy influence in this case is as certain as that of Sulphate of Quinine in intermittent diseases."

What Dr. Belot teaches at Havana will be the medical doctrine at New Orleans before the present generation has passed away; and the blessings which shall then visit the South will be the legitimate fruit of that magnificent theory of medicine, which sprang from the brain of Hahnemann at the close of the last century.

By way of resume, we may safely assert, that the allopathic practice has been far less successful than ours, because they have no remedies for reducing the extremely high temperature at all equal to aconite, belladonna, bryonia, and the other febrifuges of the specific school; nor any remedies capable of arresting the disintegration of the blood globules at all equal to arsenic and crotalus.

Moreover, that school has weakened the patient and impaired his chances of recovery by enormous blood-lettings, sweatings, purgings, irrational doses of calomel and quinine; over-heating; denial of food and water to the point almost of starvation; measures suggested rather by panic than by reason, founded on the ridiculous idea that severe cases need severe remedies; and indicating an ignorance or distrust of the bountiful resources of nature against disease

On the contrary, the homœopathic physicians have made a better record, not only in that, but in all other very severe diseases, because they have left the resources of nature unimpaired; have respected the human body as a tender and sacred thing, and have been guided to selection of remedies, not by a theory or dictum, but by a fixed and eternal law of nature—" Similia similibus curantur."

THE OPINION OF THE COMMISSION AS TO THE CAUSES AND PREVENTION OF YELLOW FEVER.—Yellow Fever is a specific disease, entirely independent of malaria, occurring rarely a second time in the same person, infectious and capable of transmission to any distance by means of fomites or infected material.

The yellow fever germs, for we accept provisionally the germ theory of the disease, are indigenous to the West Indies and perhaps to the west coast of Africa, and have been thoroughly naturalized in many localities in the southern portions of the United States. They were imported into New Orleans during the last quarter of the eighteenth century, and have existed in the soil or atmosphere of that place ever since, either in a latent or in an active condition. They may lie dormant for many years consecutively, and they require a concurrence of causes to develop them into a state of disease-producing activity.

Some of the factors which seem to be favorable to the excitation of the yellow fever germ are the following:

Low, swampy ground near the level of a tropical sea.

Long continuance of very high temperature, following heavy rains.

Long continuance of south and east winds.

Aggregations of human beings with the excreta of their bodies in small spaces. A crowded and dirty ship may be a nidus for yellow fever, as well as a crowded and dirty city.

Long continuance of calm weather, unbroken by thunder-storms.

Exposure of decaying vegetable and animal matter to a burning sun.

Inefficient drainage and the general accumulation of filth, especially the city garbage.

Deficiency of ozone in the atmosphere.

Pestilential exhalations from an upturned soil.

When the yellow fever germ has been waked into activity by these causes, it may be transported to places where none of them exist. It seems that a certain concurrence of several of the above factors is necessary to the generation of yellow fever. There is probably one combination in one epidemic, and a somewhat different combination in the next epidemic. An epidemic may be mild or severe according to the number and force of the concurring causes. There may also be other unknown, but discoverable factors, which may be necessary at one time to produce an epidemic, and not necessary another. No one of the above suggested causes could excite an epidemic by itself, and it is not probable that they all ever concurred equally to the formation of the disease. The most extensive collections and comparison of facts are necessary to illumine the very great darkness which lies upon these complex questions.

The naturalized yellow fever germs may receive so slight a stimulus as to produce only a few sporadic cases. Or they may be vitalized in certain localities to such a degree as to occasion quite an outbreak in those localities, not easily communicated to other quarters. Or thirdly, the disseminated germs may be vivified in all directions, and a general epidemic excited. Or lastly, the naturalized germs may lie entirely quiescent, until fresh and active germs are brought in from foreign ports, which then act as sparks to ignite the inflammable material already existing. We thus have four shades or degrees of yellow fever visitation: sporadic cases, local and limited outbursts, epidemics from naturalized germs, and epidemics from importation.

In sporadic cases and limited outbreaks the specific nature of the fever is not clearly brought to light, and it is sometimes difficult to diagnose it from the dominant malarial or bilious diseases. The imported epidemic, whether from Havana to New Orleans or from New Orleans to Memphis, etc., is always a more quick-spreading and malignant disease than that arising from our naturalized germs. The comparative mildness of the late epidemic in New Orleans is one out of several reasons for believing that the disease was of local origin.

The yellow fever of domestic origin can only be prevented by local sanitary measures. So long as the public authorities ignore the crying evils at home, and watch only for the enemy at the seaside, we shall continue to be scourged with repeated epidemics of yellow fever. Quarantine may or may not keep out the tropical foe, but our utmost energies should be concentrated against the enemy which has been domiciliated in our households for nearly a century.

Is there any personal prophylactic against yellow fever? None which has the least scientific value. Quinine is probably serviceable when malarial fevers are simultaneously prevailing, not because it has any power against yellow fever, but because an attack of malarial fever, preventable by quinine, might, if allowed to occur, precipitate an attack of yellow fever.

Quinine for intermittents, belladonna for scarlet fever, and vaccination for small pox, are the only prophylactics which have commanded even the partial belief of the profession. They are all confessedly homœopathic in their actions, and we confidently believe, if prophylactics for yellow fever or any other disease exist, that they will be found only by study and experiment in that direction. The poison of the rattlesnake produces an artificial disease bearing a remarkable resemblance to yellow fever, and it has proved a remedy of considerable value in the malignant forms of that affection. Inoculation with this poison was used extensively at Havana many years ago, under the auspices of an erratic genius, who, it is said, assumed the venerable name of Humboldt. The results are differently stated by the friends and the enemies of the experiment, but as the quantity inoculated was entirely too great, and large doses of antidotal remedies were simultaneously administered, it may be fairly presumed that such an experiment had no real scientific value. Whether the poison cautiously used, either hypodermically or in small doses by the mouth, may not produce a substitutive disease, which for that season at least might prevent an attack of yellow fever, is a question certain to command further consideration.

The public, we may almost now say the national health, is too vast and important a concern to be entrusted to inefficient boards of health and spasmodic Congressional legislation. We recommend the erection of a Permanent Sanitary Commission, ably constituted, well salaried, and invested by the government with large powers, to be composed of medical men, yellow fever experts, and of professed scientists; which sanitary commission shall devote itself exclusively to matters of public hygiene.

The measures we recommend to prevent the importation of yellow fever are the following:

1st. An intelligent oversight of all the tropical ports during the summer months. The Sanitary Commission should have agents in all those ports connected either with our consulates or with responsible commercial houses. It should be their business to keep the Commission regularly and frequently advised of the sanitary condition of every locality, to report the appearance and progress of the fever, the sailing of every suspicious or infected vessel, and to furnish all information the Commission may require.

2d. The declaration of a discriminating quarantine only against ports notoriously infected, regulated in character and duration by the actual facts obtained by the Commission.

3d. The thorough cleansing, disinfecting and refrigeration of every vessel arriving from yellow fever ports during the summer months. The character, mode and extent of the disinfection will be determined by the studies and experiments of the Commission in that special direction. We call the attention to the refrigeration of vessels suggested to us by Dr. Bushrod W. James, of Philadelphia. From the recent inventions and improvements in the way of fitting up refrigerating rooms and ice-making machines, he is convinced that all difficulties can be easily overcome, and the hold, cargoes and passengers of vessels can be subjected for two or three days to a low temperature, say ten or fifteen degrees below the freezing point— a temperature quite destructive of the yellow fever germ, but entirely compatible with human comfort.

4th. The sanitary surveillance for thirty days after landing, of all persons coming from tropical ports, and remaining in the city. Physicians should be compelled, under heavy penalties, to report the slightest sickness among such passengers and so soon as yellow fever is diagnosed by experts, measures for the immediate suppression of the disease should be adopted.

Quarantine is a delusive security; home-prevention is the great desideratum. Aggregation of human beings is one of the factors of yellow fever. Yellow fever germs exist always in New Orleans and other cities in a feeble or latent state, waiting to be aroused into activity by some fortuitous combination of some or all the factors necessary to their vitalization. New Orleans is notably the point of its development, and the centre of its radiating violence. Keep New Orleans in a perfect sanitary condition, and the great valley of the Mississippi is safe. Let it lie in its present state for another generation, and it will become a hot-bed of pestilence, which will dart its baneful influence along the lines of rapid transit, and repeat in St. Louis and Chicago the horrors which befell New York and Philadelphia in the last century.

To prevent the development of yellow fever we recommend:

First.—The thorough drainage of the city. This mighty work can only be efficiently achieved by the general government. Whether that would be constitutional or not we need not pause to inquire. An intelligent people will some time or other so modify their government, that it shall recognize the superior claims of the health and lives of its population over those of railroad companies and harbor improvements. As is well known, the topography of New Orleans presents very considerable difficulties in the way of a perfect system of drainage, but not such as to be insuperable to engineering skill.

Second.—The constant irrigation or flushing of the street gutters and canals by fresh river water, pumped in daily by steam apparatus. Allied to this measure is a perfect system of water-works, which shall give an abundant supply of river water for drinking, bathing and cleansing purposes, so as to supersede the use of cistern water almost altogether. In this connection we may mention a curious fact communicated to the Commission by Mr. Harry Hammersly, who keeps a floating bathing establishment in the Mississippi river. One hundred and fifty boys under twelve years of age took one, and some of them two baths a day during the whole season, and not one of them had the yellow fever, although it prevailed extensively among their families, and children of that age were peculiarly liable to it.

Third.—The consumption of all the city garbage by cremation. This new process has been extensively experimented upon during the last six months in the city of New York, and with extraordinary success. The plan has been described to us by Dr. George F. Foote, of Stamford, Conn., a brother of the inventor. A single large furnace has been so constructed as to consume 1,000 loads in twenty-four hours. The garbage is not handled, but dumped immediately from the carts into the furnace. The combustible material mingled with it—old rags, paper, straw, vegetable debris, unburnt coal in ashes, the sweepings of stores, factories, streets, etc., is about a sufficient supply of fuel for the whole work, when the fire is once started under a full blast. The gases from the combustion, carbonic oxide and carburetted hydrogen, are brought under the boiler and again burned to generate steam to drive the blowing engine. The expense for fuel is light; there is no escaping odor, and the residue or slag, about eight per cent. by weight, can be made available for useful purposes.

One such furnace in each district of New Orleans would consume daily every atom of its garbage, deliver it from every pestilential emanation and odor, and give its atmosphere something like the sweetness and purity of mountain air. Nor will it be many years, in our opinion, before the people of New Orleans, who are compelled by the nature of the soil to bury their dead above ground, will discover that in their case, at least, cremation is the very best disposition to make of the human body when the principle of life has abandoned its tissues.

Fourth.—The generation of ozone to supply its deficiency in the atmosphere when detected by the proper instruments. This should be made one of the most special and important duties of the Sanitary Commission. Ozone is a peculiar gas, a modified form of oxygen, generated by electrical storms and violent concussions of the atmosphere. It is so powerful as a disinfectant that one part of it will purify three million parts of atmospheric air. Ozone is thus nature's great disinfector and purifier, more subtle, powerful and ubiquitous than all others, and we must learn to utilize this splendid gift of the Creator for our own sanitary blessing. When it is deficient, deleterious gases accumulate and produce diseases of various kinds, and when the other factors of yellow fever productions are present, the deficiency of ozone may be the determining element for the manifestation of the disease. The scientists of the Sanitary Commission will be provided with the instruments and chemical means for detecting its slightest variation, and for restoring it in suitable quantity to the air, where by the law of the equable diffusion of gases, it will be almost instantly distributed many miles around.

There are many measures of great sanitary importance over which the Commission would exercise a strict supervision. It would enforce the frequent emptying and disinfection of water closets, sewers and all places containing putrescent matters, vegetable or animal. It would see that no sacks of decaying coffee, or chaff in rice pits, or dead animals, or any offensive matter was left exposed so as to poison the atmosphere. It would prevent, so far as possible, the destruction of trees, and in every way encourage their planting and growth. Above all, it would forbid the upturning of the soil during the spring and summer months, as epidemics of yellow fever have followed such upturning at New Orleans, Natchez and Vicksburg, in such a manner as very strongly to suggest that the relation of cause and effect existed between this exposure of the earth and the development of the disease.

Suppose, however, that all efforts to prevent the importation or the spontaneous generation of yellow fever have proved useless, and a case of the disease appears, what is to be done? Here it is that we see the necessity and value of a Permanent Sanitary Commission, learned and conscientious, exclusively devoted to the public interests, vigilant and inexorable, rich in resources and appliances, amply supplied with money and wielding by law the power necessary to effect its object. The Commission would perhaps remove or isolate the patient, scatter the family to the country, quarantine the neighborhood, barricade the streets, refrigerate the chambers, ozonize the premises and the whole district, etc. It would be its business to collect facts, to receive suggestions, to theorize and to experiment until it could discover some reliable method of stamping out the disease.

At this point, and by way of illustration, we may allude to an interesting paper sent to us by Mrs. Ingraham, of Nashville, Tenn., advocating the repeated discharge of artillery as a method of destroying the yellow fever germ. That method was employed at Humboldt, Tenn., during the late epidemic, and whilst every village in all directions around it was more or less scourged, Humboldt was entirely unvisited by the disease. Mrs. Ingraham also alludes to some satisfactory results derived from a limited use of artillery in New Orleans during the great epidemic of 1853. She thinks the microscopic germ, whether animal or vegetable, in its nature, is destroyed by concussion, as all minute insect life is destroyed in the neighborhood of a cannon when fired. It is probable that the yellow fever germ is neither animal nor vegetable in its character, but inorganic—a mere allotropic or peculiar molecular state of some of the gases ordinarily existing in the atmosphere, and the true theory of the good effect of artillery discharges is that during the electrical excitation so occasioned, a quantity of ozone is chemically generated, and serves as a purifier of the atmosphere.

Yellow fever can never be stamped out in its incipiency, unless the Sanitary Commission we recommend has considerable legal power over the medical profession. Physicians are notoriously slow and remiss in reporting dangerous and contagious diseases. Many cases no doubt exist in every epidemic before the average Board of Health discovers a single one. The professional conscience needs educating up to a higher degree of sensitiveness in relation to our responsibilities and our duties. One incorrect diagnosis may prove a blunder fatal to many thousands, and silence is sometimes a crime against society. The prompt co-operation of the entire medical profession with the Sanitary Commission might lead to the detection of the earliest approach of yellow fever—the only time when the resources of science can be successfully brought to bear for its extinction.

The science of public hygiene is a babe, new born. A Permanent Sanitary Commission will be one great step towards its development. It must have far greater powers than those of the present Board of Health. It must be a specialty. It must be liberal and unbiased. Its organ should be open to all schools and parties. It should conscientiously compare all the different methods of treatment. Its supervision should be extended to all diseases. Thus, after years of patient study, observation, experiment, comparison and elimination, it will arrive at positive conclusions, the discovery of true principles and the perfection of sure methods for the conservation of the public health.

This, and nothing less than this, will satisfy that grand and comprehensive view of the subject which the intelligence and patriotism of the American people will eventually lead them to take.

Respectfully submitted,

WM. H. HOLCOMBE, M. D., of New Orleans, *Chairman.*
T. S. VERDI, M. D., of Washington City, *Secretary.*
BUSHROD W. JAMES, M. D., of Philadelphia, Pa.
W. L. BREYFOGLE, M. D., of Louisville, Ky.
J. P. DAKE, M. D., of Nashville, Tenn.
E. H. PRICE, M. D., of Chattanooga, Tenn.
F. H. ORME, M. D., of Atlanta, Ga.
L. A. FALLIGANT, M. D., of Savannah, Ga.
LUCIUS D. MORSE, M. D., of Memphis, Tenn.
W. J. MURRELL, M. D., of Mobile, Alabama.
THOMAS J. HARPER, M. D., of Vicksburg, Miss.

CONCLUSIONS OF THE BOARD OF EXPERTS AUTHORIZED BY CONGRESS TO INVESTIGATE THE YELLOW FEVER EPIDEMIC OF 1878.

Being in Reply to Questions of the Committees of the Senate and House of Representatives of the Congress of the United States, upon the Subject of Epidemic Diseases.

WASHINGTON, *January* 29, 1879.

To the Committees of the Senate and House of Representatives of the Congress of the United States, upon the Subject of Epidemic Diseases:

The Board of Experts, "appointed to investigate the causes and method of preventing yellow fever and cholera," received the following letter, on the 26th of December, 1878:

MEMPHIS, TENN., *December* 26, 1878.

Dr. John M. Woodworth, Surgeon General, having by resolution of the joint committee of the Senate and House of Representatives (appointed to investigate the causes and method of preventing yellow fever and cholera) been constituted President *ex-officio* of the Board of Experts provided for by resolution of Congress, he will proceed to organize the same and direct them to investigate the following points of inquiry, viz:

1st. The origin, cause, and distinctive features of yellow fever and cholera; whether or not they are indigenous to any part of the United States; if not, how they are brought to this country, and the localities from which they come; and if found to be indigenous and also imported, in what proportion and to what extent has their presence in the United States been owing to importation.

2d. The season of the year and atmospheric conditions, when and in which they may be propagated.

3d. The means to be adopted by which their introduction into this country from other localities may be prevented.

4th. The method of preventing its propagation and spread, when once introduced into any part of the United States.

5th. The number of deaths that have occurred in the United States during the present year; the expenditure and the injury to business resulting therefrom.

The foregoing is the order of the committees in joint session, and the experts will confine themselves to it as nearly as possible.

ISHAM G. HARRIS,
Chairman Senate Committee.
STANLEY MATTHEWS,
Of Senate Sub-Committee.
CASEY YOUNG,
Chairman House Committee.

In compliance with the foregoing instructions, an organization of the Board of Experts was completed by electing Dr. Chaille, secretary, and adopting a plan of operations for continuing the investigation which had been commenced by the Yellow Fever Commission, in October last. For the details of the plan, reference is respectfully made to the accompanying record of the proceedings of the Board of Experts at its meeting for organization, held in Memphis, December 26th, 27th and 28th, 1878. Upon adjournment of the Board, in Memphis, the members entered immediately upon the work assigned to them.

Including the thirty-four infected cities and towns visited by the Yellow Fever Commission which was merged into the present Board, more than fifty localities were carefully and personally examined previous to the 15th instant, on which day the Board convened in the city of Washington, in accordance with instructions. A great number of facts have been gathered respecting the history of the late epidemic of yellow fever, which have guided the Board in arriving at the conclusions which are respectfully submitted in reply to the questions of the Congressional Committees on Epidemic Diseases.

It should be borne in mind that these conclusions are based upon the evidence of a necessarily incomplete investigation of the epidemic—incomplete because of the urgent demands for public health legislation during the present session of Congress; otherwise the Board might not be held excusable for the seeming haste in dealing with this great subject. For among the most difficult questions which confront us are those which relate to the prevention of disease and untimely death; and this is especially true in respect to yellow fever and cholera, the mysterious and elusive causes of which become associated with man in his travels and traffic.

The Board is unanimous in the opinion that the investigation of the late epidemic should be completed, and that the study of the natural history of yellow fever should be systematically pursued, and especially that the inquiries should embrace the perpetually infected ports of the West Indies, whose fields give greatest promise of practical results as the reward of faithful scientific inquiry. It is accordingly recommended that two or three skilled experts be charged with the completion of the study of the late epidemic, which can be concluded in a few months, and that at least two such experts be authorized to proceed to the West Indies, there to make a more thorough study of yellow fever than has ever yet been undertaken, and that they be accompanied by an experienced microscopist. It is further recommended that the necessary steps be taken by Congress to secure the co-operation of the Spanish and other foreign governments, through an International Commission, or otherwise, in an earnest effort to ascertain the cause, or causes, which perpetuate the yellow fever from year to year in the West India Islands, and to devise ways to remove the cause, or causes; or to lessen the chances of transporting the poison to the United States or other countries.

Yellow fever should be dealt with as an enemy which imperils life and cripples commerce and industry. To no other great nation of the earth is yellow fever so calamitous as to the United States of America. In a single season more than a hundred thousand of our people were stricken in their homes, and twenty thousand lives sacrificed by this preventable disease. Systematic, scientific study should be unceasingly directed against this subtle enemy until our weapons are so perfected as to destroy or to surely hold it in check. In the benefits flowing from scientific research, America has received from European nations more than she has bestowed, but the opportunity is now offered to pay a part of the debt by continuing to completion, so far as human skill will permit, the work which has been begun.

In the light of scientific experience, and of such facts as have been obtained, the Board has given careful consideration to the outlines of a system of observation of yellow fever and cholera; and, as connected therewith, to shipping in foreign ports, to the interchange of information, and to the inspection and sanitation of infected vessels and persons outside of our ports and after their arrival; together with the supervision of inter-State travel and traffic in times of epidemic within our borders.

The object aimed at, is to present the outlines of a system of quarantine, which may afford the greatest attainable degree of protection against the introduction and spread of infectious epidemic diseases; and at the same time inflict only a minimum of injury and inconvenience upon commerce. Two classes of medical officers are suggested: First. Medical officers of health to serve in foreign ports from which we receive importations of yellow fever and cholera. Second. Medical officers of health to have charge of Quarantine Stations, and to supervise inter-State travel and traffic from infected places in times of epidemic.

The two classes of Medical officers suggested are considered indispensable to any method of quarantine which does not involve complete suspension of intercourse with infected ports. The Board regards it to be especially important that the selection of these officers should be made from men skilled in medicine and sanitary science. The success of any modified quarantine scheme depends almost entirely upon the competency and fidelity of its medical officers. One of the difficulties which has confronted the Board in considering the subject of quarantine is the lack of definite knowledge respecting the duration of life or virulence of the poisons of yellow fever and cholera. It is now known that the poison of neither is susceptible of long vitality when exposed to the open air; but it is not yet determined how long its infectious properties may be preserved in closely shut chambers or in compartments of vessels, or when confined in the folds of clothing or goods. It consequently follows that ships are especially dangerous carriers of these diseases, and also that they remain sources of infection for months after having been infected with the poison.

Another difficulty arises from the imperfect state of scientific knowledge respecting disinfection as applied to the destruction of the poison of yellow fever.

It is deemed of great importance that the means may be provided by Congress for obtaining trustworthy information by telegraph in respect to the outbreak and progress of cholera, yellow fever, and other epidemic diseases in all parts of the world, and the departure of vessels from infected ports bound for ports in the United States. The diffusion of trustworthy information among the people respecting the existence and progress of preventable diseases, at home and abroad, should be encouraged, as tending to avert the evils of panic, and to promote measures of prevention.

The carrying into effect of an efficient system of quarantine contemplates a central authority or Health Department. It is considered important that such a department should be so organized as to gain strength from, and give strength to, State and municipal health organizations. In view of the diversity of circumstances attending vessels arriving from infected ports, the difference exhibited by different ports in respect to their liability to infection; and the difference in such liability in the same port at different seasons and under varying circumstances; it is desirable that matters of detail should not be fixed by law, but should be left to regulations to be prepared under proper restrictions. The great interests which such regulations would guard, and the necessity for changes in them from time to time, as increased experience or knowledge, or other causes, might indicate, warrant the recommendation for the establishment of an advisory Board of Health, to be composed of men eminent in sanitary matters, who together with the chief officer of the Health Department, shall frame all needful rules and regulations for carrying into effect, subject to the approval of the President, such National public health laws as may be enacted.

THE ORIGIN, CAUSE AND DISTINCTIVE FEATURES OF YELLOW FEVER AND CHOLERA.

First Question.—"*The origin, cause and distinctive features of Yellow Fever and Cholera; whether or not they are indigenous to any part of the United States; if not, how they are brought to this conntry, and the localities from which they come, and if found to be indigenous and also imported, in what proportion and to what extent has their presence in the United States been owing to importation.*"

Second Question.—"*The Season of the year and atmospheric conditions, when and in which they may be propagated.*"

The Origin, Cause and Distinctive Features of Yellow Fever.

1. Yellow fever is a specific disease, and is produced by the introduction into the human organism of a specific poison.

2. The specific poison of yellow fever has never been chemically nor microscopcially demonstrated, nor in any way made evident to the human senses.* Nevertheless, we hold that it is safe to assume that it is material and particulate, and endowed with the ordinary properties and subject to the ordinary laws of material substances.

3. We hold further, that facts connected with the dissemination of yellow fever warrant the inference that the yellow fever poison is not only material and particulate, but that it is also organic, and endowed with the vital properties of growth and reproduction.

4. Yellow fever is not a malarial disease, that is, it is not the offspring of that marsh miasm which produces paludal or periodic fevers; and we know of no facts which warrant the conclusion that malarial influences contribute toward the dissemination and mortality of yellow fever, in any other way or to any greater extent, than they contribute toward the dissemination and mortality of other epidemic diseases.

5. The concurrence of local conditions favorable to the evolution of the yellow fever poison, seems to be necessary to the evolution of yellow fever epidemics; but as to the nature of these favorable local conditions, we have no positive knowledge. In a negative way we know that yellow fever often fails to swell into epidemic prevalence when high summer heat, atmospheric moisture, marsh malaria, and abundant filth are all present; so that there must be some *conditio sine qua non* other than any or all of these. The discovery of this unknown factor in the generation of yellow fever epidemics would be a great boon to humanity.

6. Yellow fever is a disease of singular local attachments. It often becomes epidemic in one section of a city, and sometimes a very small section of it, while it fails to present itself at all in other sections of the same city, and in these localizations it exhibits a remarkable indifference to topographical and social surroundings.

7. In the dissemination of yellow fever, atmospheric air is the usual medium through which the infection is received into the human system.

We know of no instance, either from our own observation or from the published records of yellow fever, in which it has been established that the disease has been carried to any considerable distance by atmospheric currents or by any modes or vehicles of conveyance other than those connected with human traffic and travel.

8. Amongst the several races of men the European or white race manifests the greatest susceptibility to yellow fever, and affords the highest ratio of deaths to cases. The susceptibility of the black race is much less, and amongst them the ratio of deaths to cases is much lower. The susceptibility of mulattoes, and the ratio of deaths to cases amongst them is intermediate between that of the whites and black, and is greater or less in proportion to their approximation in blood and in race characters to the one extreme or the other. Although yellow fever has never been known in Asia, yet Asiatics are liable to the disease; cases and deaths having occurrred amongst the Chinese residents of our Southern cities during the recent epidemic.

9. In yellow fever, as in most other epidemic diseases, a period of incubation intervenes between the introduction of the specific cause into the body and the outbreak of the sickness. This period of incubation varies, and in the

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*Yellow fever, like many other diseases, has a characteristic odor; but whether this odor belongs to the yellow fever poison itself, or to some incidental product of the pathological process excited by it, is not known.

large majority of cases it does not exceed a few days, say from two to five. There is a smaller number of cases in which the period of incubation is perhaps still longer, but the evidence is not conclusive in those occasional cases where it seems to be protracted to twenty or thirty days.

10. In yellow fever, as in most other epidemic diseases, one attack affords a very large measure of protection against subsequent invasion. Second attacks are not unknown, but they are of very rare occurrence.

11. Yellow fever, in its epidemic form, is a disease of warm climates, and of warm seasons of the year. The yellow fever poison is not able to withstand the influence of frost, and when exposed to a freezing temperature it is rendered innocuous and is probably destroyed.

12. There is good reason to believe that the yellow fever poison can be destroyed by intense heat; and it is probable that the temperature of boiling water is fatal to it.

13. There is reason to believe that the yellow fever poison can be destroyed by chemical disinfectants when they can be adequately used; that is, when they can be brought into contact with it in a sufficient degree of concentration.

The Geographical Distribution and Migrations of Yellow Fever.

14. Yellow fever was not known to the people of the Eastern Hemisphere until after the discovery of America by Columbus. The earliest epidemics of which we have any historical information occurred during the first half of the seventeenth century in the West India Islands; since that time these islands seem to have constituted the favorite habitat of the disease.

15. From the West India Islands, as the earliest historical focus of the disease, yellow fever has been carried at different times into several of the countries of Europe, Africa, South America, and North America.

16. In Europe it has invaded Spain, Portugal, Italy, France and England. In Africa, it has prevailed along the west and north coasts. In South America, it has prevailed in British Guiana, Columbia, Peru, Bolivia, Buenos Ayres and the Brazils. In North America, it has invaded Honduras, Mexico, and the following twenty-four States of the Union: Massachusetts, Rhode Island, New Hampshire, Connecticut, New Jersey, Pennsylvania, New York, Delaware, Maryland, Illinois, Missouri, Ohio, Kentucky, Virginia, North Carolina, South Carolina, Georgia, Alabama, Tennessee, Mississippi, Arkansas, Louisiana, Florida and Texas.

17. Yellow fever has never made its appearance on the great continent of Asia; nor in Australia; nor in any of the Islands of the Pacific Ocean: and it has not prevailed extensively on the Pacific coast of the American continent.

18. In all the countries outside of the West Indies which have been visited by it, yellow fever is an exotic disease; and in all of them its introduction can be traced either directly or indirectly to the West Indies. In some of them it seems to have established itself permanently, and to have become endemic; as for example, in the Brazils. In most of them it has failed of naturalization, and successive epidemics can be traced to successive importations.

19. Yellow fever made its first appearance within the present limits of the United States in the year 1693, in Boston, Massachusetts, into which it was imported from Barbadoes. In 1699 it paid its first visit to Philadelphia, coming also from Barbadoes. It reached New York for the first time in 1702, having been imported from St. Thomas. The first epidemic in New Orleans occurred in 1796. Its origin has not been certainly traced; but the fever was in the same year imported into Charleston from the West Indies.*

20. Yellow fever has invaded the present territorial limits of the United States, according to the testimony of existing records, in eighty-eight different years,* namely, in—

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*The historical statements here given are such as we have been able to compile from easily accessible works; and while we believe them to be substantially correct, we do not guarantee them to be altogether free from error.

1693, 1699, 1702, 1705, 1713, 1728, 1732, 1739, 1741, 1744, 1745, 1747,
1748, 1762, 1765, 1791, 1792, 1793, 1794, 1795, 1796, 1797, 1798, 1799,
1800, 1801, 1802, 1803, 1804, 1805, 1806, 1809, 1811, 1817, 1818, 1819,
1820, 1821, 1822, 1823, 1824, 1825, 1826, 1827, 1828, 1829, 1830, 1831,
1832, 1833, 1834, 1835, 1837, 1838, 1839, 1841, 1842, 1843, 1844, 1845,
1846, 1847, 1848, 1849, 1851, 1852, 1853, 1854, 1855, 1856, 1857, 1858,
1859, 1862, 1863, 1864, 1865, 1867, 1868, 1869, 1870, 1871, 1872, 1873,
1875, 1876, 1877, 1878.

21. For seventy-seven of these eighty-eight years, we have evidence, more or less complete, of importation; and in seventy-one out of the seventy-seven the evidence points to the West Indies as the source of the infection. Four times, namely, in 1839, 1844, 1847, and 1867, the infection has been traced to Mexico; but in 1867, it was also traced to the West Indies. It is said that in 1800 and 1838 the disease was brought from Demarara; but in 1800 it was also brought from the West Indies. The fever of 1870 is attributed to Honduras.*

22. In the United States yellow fever has never anywhere acquired permanent domicil; and every epidemic that has occurred in the United States can be traced either with certainty or with a high degree of probability to a new importation.

23. Every epidemic of yellow fever that has occurred in the United States has been in chronological sequence to the increased prevalence of the disease in countries to the south of us, with which at the time we were in commercial communication.

24. It is a rule, very nearly without exception, that yellow fever has always prevailed in some of our seaports before it has made its appearance anywhere in the interior of the country.

25. We know of no place within the territorial limits of the United States in which it has been established that yellow fever has ever originated indigenously—that is, in which it has appeared as the product of any conjunction of meteorological, terrene, and other local influences. The testimony that has been relied upon to prove that the disease has sometimes been of indigenous origin in some of our Southern seaports, as for example, New Orleans, is mostly of a negative character, and is certainly not conclusive.

26. While the proposition that yellow fever is sometimes indigenous in some of our southern seaports is certainly not established, there is, on the other hand, ample proof that many of the epidemics that have occurred in these seaports have been due to importation; and those in which importation has not been traced, have occurred under circumstances that would make importation not only possible, but probable—there having always been in these cases the previous existence of yellow fever in some foreign port between which and the American port there has been at the time commercial communication.

27. While we know of no facts which establish the proposition, that yellow fever has become indigenous or endemic in any part of the United States, there are facts which seem to warrant the inference that, in some of our southern cities, the specific poison of the disease, when hidden away from the cold in sheltered places, may live through a mild winter, and give rise during the succeeding summer to scattered cases of the fever. It would seem to be theoretically probable that these scattered cases would, in their turn, give rise to an epidemic, but the proof that they have ever done so is not conclusive.

28. In its migrations across seas and continents, yellow fever has always followed the lines of human travel and commercial intercourse, and the rapidity, the frequency, and the extent of its diffusion in space and time correspond strictly to the rapidity, the frequency, and the extent of the communication between infected and uninfected places. No instance is known in which it has passed from one place to another in a shorter time than would have sufficed for a man to have made the same journey.

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*The historical statements here given are such as we have been able to compile from easily accessible works; and while we believe them to be substantially correct, we do not guarantee them to be altogether free from error.

29. Yellow fever is transmitted across seas and oceans in steamships and sailing vessels; and the infection may be connected with the vessels themselves, or with the cargoes, or with the crews, and passengers.

30. Yellow fever is transmitted through the interior of a country by steamboats, barges, and other river craft; and by railroad cars, wagons, carriages, and other land vehicles; and the infection may be attached to the boats, cars, or other vehicles themselves, or to their cargoes, or to the persons traveling upon them with their baggage.

31. The most frequent agency in the dissemination of yellow fever from place to place is found in yellow fever patients; and more epidemics of yellow fever have resulted from the introduction into previously exempt places of persons sick of the disease, or falling sick after arrival, than from all other causes. To what extent the body of the sick person is responsible for this result, and to what extent his clothing and baggage is responsible for it, is not known.*

32. Infected vessels and boats are sources of very great danger, since it is found that the yellow fever infection clings to them with wonderful pertinacity in spite of all the methods of ventilation, disinfection and purification that have up to this time been called into requisition. In the meantime, it is safe to say that only a small percentage of vessels and boats coming from infected places are themselves infected. The discovery of a method which would enable us to discriminate between infected and uninfected vessels, without placing in jeopardy the lives of human beings, would be of inestimable value.

33. Fomites of various kinds, particularly clothing, bedding, and other articles that have been used by yellow fever patients, may serve as vehicles of infection; and outbreaks of yellow fever have been traced to articles of this sort.

34. Ordinary merchandise in original and unbroken packages may become infected and lead to outbreaks of yellow fever; but for obvious reasons it is much less likely to prove dangerous than bedding and wearing apparel. Fomites of this class may become infected from having been stored in an infected house, or from having been shipped in an infected vessel.

The Origin, Cause and Distinctive Features of Cholera.

35. Cholera is caused by a specific poison which is capable of reproduction or multiplication.

36. Cholera has its endemic home in India, especially in the valley and delta of the Ganges.

37. Whether the endemic existence of cholera in India is due to peculiarities of air, temperature, soil, water, and the filth of crowdedmasses of people, is not determined; but it is undoubtedly true that each and all of these peculiarities influence the propagation of the poison and the spread of the disease outside of India.

38. Experience outside of India abundantly proves that the generative principle of cholera is portable, and that it is carried from place to place by vessels, railway cars and other vehicles, and in clothing and baggage, especially when excluded from light and air.

39. The spread of epidemic cholera is characterized by its localizations in particular places, houses, or ships and other vessels, which then become centres of infection. The activity of these centres of infection, as well as the intensity and fatality of the disease, appears to depend upon certain causes associated with the aggregation of human beings, and the attendant evils of impure air, of impure water, and of filth.

40. Individuals infected with the cholera poison, who travel during the incubation of the disease, may, under favoring conditions, establish new centres

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***This proposition is not intended to ignore the many facts which show that persons sick of yellow fever going into places previously exempt often fail to occasion other cases.**

of infection at such places as they may have reached when the disease develops itself.

41. These favoring conditions are both individual and local, and when either of them is absent the cholera producing principle may remain dormant, or lose its reproductive power altogether.

42. There is strong reason for believing that cholera dejections, which appear to be harmless in their fresh state, become actively poisonous by subsequent changes. Acid disinfectants seem to alter the character of the dejections so as to render them innocuous.

43. Cholera is not indigenous to the United States. Its presence here is wholly due to importation by ships, by baggage and other infected matters, and by persons.

44. Every epidemic of cholera in the United States has followed as a sequence to its epidemic prevalence in Europe and India.

45. Cholera has prevailed most frequently in the United States during the warm seasons of the year; but epidemics have been known to occur during the winter season.

PREVENTION OF THE INTRODUCTION OF YELLOW FEVER AND CHOLERA.

Third Question.—"*The means by which their introduction [yellow fever and cholera] into this country from other localities may be prevented.*"

46. The legal enactments of various countries in respect to the sanitary management of ships, and the sanitary memoranda from time to time distributed for the guidance of owners and masters of ships, have all failed in accomplishing the great end of making them healthy. They still perform the unenviable role of carriers of pestilence.

47. It is probable that the first great improvement to be effected in the sanitary condition of ships should begin with some alteration in their construction which will permit more general and thorough ventillation through portions which now remain shut chambers of stagnant air, and it may be added, air frequently poisoned by pestilential infection.

48. We, therefore, find that the recommendations most worthy of confidence include: first, the surveillance of ships at the time of sailing from infected ports to any part of the United States; secondly, their inspection, detention and disinfection, when found necessary upon reaching our coast.

49. The following scheme of quarantine, constructed from a purely medical stand-point, is recommended.

This scheme contemplates two classes of medical officers; one class for foreign service, and one class for home service.

Medical Officers for Foreign Service.

50. Medical Officers of Health for Foreign service should be stationed at the various foreign ports having commercial relations with the United States, where yellow fever, cholera, or other epidemic infectious diseases prevail.

51. Their duties should be to acquaint themselves thoroughly with all diseases usual to, or at any time prevalent in, or around the respective places to which they are assigned and to make to a chief health authority, at Washington, the same reports, as are now required of consular officers by section two of the National Quarantine Act, approved April 29, 1878.

52. They should forward reports of outbreaks of cholera, yellow fever or other epidemic diseases, and of the departure of vessels from infected ports, or of vessels having on board persons or goods (baggage) from infected ports, to be communicated by telegraph, or in the most expeditious manner, to a chief health authority at Washington.

53. It should be their further duty to obtain the medical history of all ships trading to or from their respective ports in regard to any previous occurrence

of yellow fever or cholera, or other infectious epidemic disease on board; and transmit the same for the information of said health authority.

54. The adoption of these provisions should not be understood as relieving consular officers at ports where no medical health officer is stationed, from performing the duties now required of them by the act before referred to.

Equipment of Quarantine Establishments.

55. Quarantine establishments should be thoroughly equipped, and should embrace:

a. A suitable residence for the medical officer for quarantine service and his assistants.

b. Hospital wards for the care of the sick; namely, a ward or wards for persons sick with diseases of an infectious character, and a ward or wards for persons sick with non-infectious diseases. These may be established in houses on the land, or in suitable vessels provided for such purpose.

c. A separate building or buildings for the accommodation of the well passengers and crews during the time they may be detained under observation,

d. A building in which the baggage and clothing may be cleansed and disinfected.

e. Suitable buildings or sheds for receiving freight discharged from infected or suspected vessels.

f. Boats and apparatus for boarding and disinfecting vessels.

Medical Officers for Home Service.

56. Duties of Medical Officers of Health for Home Service:

a. To have charge of the various quarantine stations which are or may be established.

b. To perform all duties usually incumbent upon quarantine officers.

c. To detain ships infected, or suspected to be infected, or recently cleared from infected ports; to compel the removal of cargo; and disinfect vessels and cargoes by approved methods.

d. These large discretionary powers should apply only to yellow fever, cholera, typhus (or ship) fever, to small-pox, and to such other diseases as may be indicated by regulations.

e. To perform prescribed duties at seaboard and frontier towns, and at places of epidemic outbreak.

f. To make sanitary inspections and detentions, when necessary, of carriers engaged in inter-State transportation, and report results to a health authority at Washington.

g. To report to a health authority at Washington the sailing of all infected vessels from the port at which they are stationed; and also to report the circumstances attending the detention of every infected or suspected vessel.

h. To act as quarantine officers when ordered to any exposed place which has no established quarantine station.

i. To report to a health authority at Washington all obtainable facts regarding the origin, cause, and history of epidemics, including all facts connected with their progress which in any manner appear to influence their spread and mortality.

PREVENTION OF THE SPREAD OF YELLOW FEVER AND CHOLERA.

Fourth Question.—"*The method of preventing their propagation and spread* [yellow fever and cholera] *when once introduced into any part of the United States.*"

Measures to prevent the spread of yellow fever and cholera when they appear in the United States may be classed under the following headings: Local

Sanitation; Isolation of the sick; Segregation or Dispersion of the Well; Disinfection, or Destruction of the Poisons; Measures of Personal Prevention; Inland Quarantines.

Local Sanitation—Its Application to Yellow Fever.

57. While yellow fever belongs to a class of diseases which are not controlled by local conditions, it is no doubt true that filthy and insanitary habitations and towns, and general neglect of hygienic rules, exercise an unfavorable influence upon this disease similar to that which they exercise upon other forms of epidemic sickness.

58. Insanitary situations or modes of living deteriorate human health and strength, and thus diminish the power of resisting the invasion of disease.

59. It, therefore, follows that the most perfect local sanitary conditions attainable, should be established and uniformly maintained in our cities and towns, and their surroundings. Filth should not be allowed to accumulate; nor should the sanitary reform be deferred until yellow fever has made its appearance.

60. The evils attending the removal of accumulations of garbage after yellow fever has appeared, are not believed to be as prejudicial to either the sick or the well as the tolerance of such accumulations.

61. When the malarial poison coincides with that of yellow fever in attacks upon the human system, it increases the danger. Consequently, in carrying into effect measures of local sanitation during epidemics, care should be taken that large surfaces of soil from which evolution of malaria is likely to ensue, should not be exposed to the sun.

62. There is much testimony showing that the effluvium which emanates from the bodies of the dead may be associated with infection. It is therefore recommended that the bodies of persons who die of yellow fever be promptly buried, and that the assembling of persons at funerals be discouraged.

Local Sanitation—Its Application to Cholera.

63. Cholera belongs to a class of diseases in the dissemination of which filth is an important factor, and what has been herein said in regard to local sanitation for the prevention of the propagation and spread of yellow fever, applies with greater force to cholera.

64. The cholera producing poison contained in the ejections from cholera patients is received by the well through the medium of drinking water, and probably through the air in the form of dust.

65. Care should be taken in disposing of the ejections of cholera patients, so as to avoid the possibility of contaminating the drinking water, and to avoid placing them where they are liable to be dried and carried about by the wind.

Isolation in Yellow Fever as a Means of Prevention.

66. Isolation of persons sick with yellow fever is an efficient method of arresting its spread.*

67. In many towns where yellow fever prevailed as an epidemic in 1878 the rapid spread of the disease was apparently due to visits made by friends to those first attacked.*

68. All visits to the sick should be prohibited, except such as are necessary for their proper care.*

Isolation in Cholera as a Means of Prevention.

69. Isolation of the sick, as a means of preventing propagation and spread, is less important in cholera than in yellow fever; but as visits to persons sick with cholera are attended with risk of contamination of the clothing with ejections, such visits should be forbidden.

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*NOTE.—These suggestions are simply based upon facts, and do not commit the Board to any expression of opinion as to whether or not the poison of yellow fever is reproduced in the human body, or is contagious from person to person.

Segregation in Yellow Fever and Cholera as a Means of Prevention.

70. Segregation, or dispersion of the population liable to attack from yellow fever and cholera is a valuable means of arresting their spread, and also of preventing the excessive mortality attending the aggregation of the sick; but it should be effected under medical surveillance, as otherwise there is great danger that infected clothing and baggage of refugees may convey the disease to other localities.

71. The establishment of camps of refuge outside of towns in which yellow fever has been epidemic has proved to be a wise sanitary measure.

72. Segregation, as a mode of arresting the spread and mortality of yellow fever, is found most effective in places not recently visited by the disease. The higher mortality rate of some of the towns attacked during 1878, and also the more sweeping character of the epidemic, were unquestionably due to the fact that very few of the population had been protected by previous attacks of the disease.

73. In all cases where segregation is recommended, whether in yellow fever or cholera, disinfection of clothing and baggage, should be done at the commencement rather than at the end of the journey, and the clothing changed and the bodies cleansed as far as it may be practicable.

Disinfection as Applied to Yellow Fever and Cholera.

74. Attempts to destroy the poison of yellow fever by chemical disinfectants in the open air have not been attended with success. Efforts to disinfect houses, ships, steamboats, and other public conveyances, are attended with great practical difficulties.

75. Research and experiment in reference to disinfection should be liberally encouraged. This is particularly true in respect to those experiments which aim at the practical destruction of yellow fever and cholera poison, by artificially produced extremes of temperature, either of cold or heat. If the apparatus and experiments now projected for the utilization of extreme cold to this purpose, should be found to be of practical application to the disinfection of the holds and other parts of vessels, their success would prove to be a sanitary acquisition of inestimable value.

76. Should this method of disinfection prove impracticable in its application to holds of vessels, it may still prove more efficient in destroying the infection of clothing, baggage and many kinds of goods, than any other artificial means which can be employed.

77. The slowness with which yellow fever usually extends its areas of local infection, unless aided by carriers which travel faster and farther than itself, should inspire the hope that agents will yet be discovered which will effect the destruction of the poison in circumscribed areas of infection.

78. Atmospheric air is an efficient, as well as a generally applicable, disinfecting agent, both as respects yellow fever and cholera. The apartments of the sick should, therefore, be freely ventilated.

79. The natural history of the poisons of yellow fever and cholera, shows that neither retains its infectious quality for a long period when exposed to pure air. It therefore follows that exposure of materials infected by these poisons in the open air, will render them innocuous to a degree having direct relation to the purity of the air and the duration of the exposure. But, on the other hand, this method of disinfection, when practiced in the midst of populations, is an occasional means of spreading the disease to persons living or occupied near the place where the infected materials are exposed. It should, therefore, be discouraged, except in positions so isolated as to avoid this danger.

80. Burning of clothing and bedding used by the sick may be justifiable at the beginning of epidemics, under circumstances where all modes of disinfection are impracticable, and where their destruction does not deprive sick survivors of comforts which cannot be replaced.

81. Disinfection is applied with more certainty to the prevention of cholera, than of yellow fever, inasmuch as the cholera poison is known to be connected with the ejections of the sick.

82. Whenever cholera prevails, railroad coaches and steamboats, or other vessels should be required to provide shut receptacles for the ejections of passengers, which ejections should then be disinfected and properly disposed of.

83. It is difficult to prescribe fixed rules by which railroad cars, or other carriers of freight or passengers, can be kept clear of infection by yellow fever. When yellow fever prevails in any part of the country, it is well to suggest that railroads should not run sleeping-coaches to or from infected places, and that the coaches which are suffered to run should have only wooden seats, which, together with every other portion of the car, should be subjected to daily scrubbing and cleansing.

Personal Prophylaxis in Yellow Fever and Cholera.

84. When yellow fever or cholera prevails, great care should be exercised to prevent derangements of health by excesses in eating or drinking, or by exposure to any cause which may be likely to produce sickness, or to enervate health and strength. Healthy systems, which are kept under proper hygienic influences, are more apt to escape attacks of yellow fever and cholera during their epidemic prevalence.

85. No drugs are known which can be relied upon as preventatives of yellow fever or cholera. It should be noted that the diarrhœa preliminary to cholera is amenable to treatment; consequently, when cholera is prevalent, persons should be instructed to apply for treatment or advice in reference to this symptom.

Inland Quarantine in Yellow Fever and Cholera.

86. Forced suspensions of intercourse which were instituted, in many localities, during the late epidemic, exercised a marked influence in arresting the spread of yellow fever.

87. But, on the other hand, their rigid enforcement in some instances inflicted privations and cruel lack of necessary attentions upon the sick.

88. If the sentiment of self-preservation should cause such measures to be resorted to hereafter, it is a great desideratum that they should be made to conform to some uniform plan which shall deprive them of the harsh and unreasonable features which attend their enforcement.

89. In the present state of popular alarm and excitement, it is greatly to be feared that outbreaks of yellow fever or of cholera, would lead to a form of quarantine the most to be deprecated of all others; which is the compulsory confinement both of the sick and the well within the afflicted towns. Such an occurrence would prove an ineffaceable blotch upon the civilization and philanthrophy of the country and of the age.

90. It is the duty of health authorities to endeavor to allay panic which tends to disorderly and inconsiderate action. It is probable that this end can be attained more certainly by distributing bulletins giving truthful accounts of the prevelance and nature of the disease, with advice as to private and public hygiene.

The foregoing ninety propositions were unanimously adopted by the Board, with the exception of the following negative votes :

Dr. Falligant voted in the negative upon the propositions numbered 3, 4, 5, 10, 18, 21, 22, 25, 26, 27, 57.

Fifth Question.—" *The number of deaths that have occurred in the United States during the present year; the expenditure and the injury to business resulting therefrom.*"

It is respectfully submitted that a full and satisfactory answer to this important question would require much more time for the collection of the many facts indispensible to a trustworthy solution than has been given, and that some of these facts are not yet obtainable.

It has, therefore, been deemed advisable to submit no more for your consideration than—

First. Approximative and minimum estimates of such expenses as immediately involve some knowledge of medical facts; accompanying these estimates with the data upon which they have been based.

Second. Reference—without estimates—to those causes of expense and loss which require researches not within our time and power to prosecute.

Health is the capital of all who work, and any loss of health impairs that capital. An epidemic entails on a community loss of property as tangible as the results of a fire. The average man may be considered a machine, and as such has a producing power of a certain value, and any thing that interferes with his production affects the public weal in dollars and cents. When he dies a given amount of wealth is stricken from the community, and when he falls sick, the public loses another sum from the necessary attendance on him by nurses, as well as from his own loss of labor.

It has been estimated by careful statisticians that a child ten years old is worth to the community $500, and that an adult is worth $1000. In calculating the loss to the country by deaths during the recent epidemic, it has been impossible to find out exactly the proportion of minors to the whole number of the decedents, and in this report the Board have endeavored to divide them according to the best information within their reach. This proportion has varied greatly in different places. In New Orleans, for instance, the relative number of children taken with the yellow fever was much larger than in Memphis, which was due, doubtless, to the fact that in the former city the adults were more thoroughly protected against the disease by a previous attack.

In estimating the injury to the material interests of the country resulting from the epidemic, it should be borne in mind that some of it may be more apparent than real. It consists of the diversion of trade rather than the destruction of it. New channels of business are opened, and traffic changes only its course.

The figures on which the following estimates were based are largely conjectural. They have been collected, however, from sources entitled to credit, and have been strictly scrutinized.

It is proposed to consider—

I.—*The Actual Diminution of National Wealth.*

At least 18,000 (and probably as many as 20,000) deaths from yellow fever have occurred during the late epidemic. Of this number some three-fifths were minors, and two-fifths were adults, representing a loss of $12,600,000, according to the basis of valuation already mentioned. It is believed that at least 120,000 cases of sickness from yellow fever took place during the same period. The loss of time of these patients was a public loss, and should be considered in any computation on the subject. The average duration of their illness and convalescence is not far from twenty-five days, and the value of their time may be put at fifty cents a day. This item would amount to $1,500,000. To this sum should be added the value of the labor diverted from production or useful activity by attendance upon 120,000 sick persons, for ten days each, at fifty cents per day, $600,000.

Not less than 150,000 persons fled from their homes and passed their time elsewhere in idleness. Their average absence would be not less than three months, and if their time is reckoned at fifty cents a day, this item would give $6,750,000. Another element in the point of inquiry is the loss of capital invested in lands, houses, railroads, ocean and river craft, machinery, vehicles, implements, commodities, etc., which were unused on account of the epidemic; but, owing to obvious difficulties, no estimate is made for the loss from these sources. The same statement also applies to the loss by decay, resulting from the want of repair and means to preserve constructions of all kinds.

A certain portion of the cotton crop and other products of the soil were lost for want of their proper cultivation and gathering. This occurred on plantations where it was impossible to hire labor. This loss is very large, amounting to millions of dollars, but it cannot be correctly estimated.

It is probable that no one item of loss equals that due to the depreciation in value of real estate. However, since this depreciation is temporary, it is believed that the actual present loss by this cause would be represented—not by the amount of this depreciation—but by the interest, for a limited number of years, on said amount. We have not the facts requisite for such an estimate.

It will be seen that we are not able to estimate correctly the total losses to this country; but these losses have been variously estimated by others at sums ranging from one hundred millions to two hundred millions of dollars.

II.—*Expenditures.*

It is understood that the point of inquiry made by the Committees of Congress in regard to the expenditure of money, embraces the following items, although they are in part covered by the foregoing statements:

Cost of sickness of 120,000 persons for 25 days, at 50 cents per day	$1,500,000
Cost of medical attendance, nursing the sick, etc	3,600,000
Cost of 18,000 funerals, at $20 each	360,000
Cost of special sanitary work	100,000
Total	$5,560,000

For such expenditures, about $2,000,000 were charitably contributed.

III.—*Disturbance to Business.*

Another item of loss which cannot be given even by approximation is that from the disturbance of the ordinary conditions upon which business calculations are based. It enters into many questions, among them that of life insurance, and requires in this place only a mention.

IV.—*Losses to New Orleans.*

The following special estimate of the losses that have accrued to the great commercial city of New Orleans, includes some items not considered by figures in the first class, such as loss on capital and depreciation of property; the total losses having been variously estimated by others at from twelve to one hundred millions of dollars:

Cost of sickness of 27,000 persons, including attendance, nursing the sick, etc	$1,200,000
Cost of four thousand six hundred funerals, at $25	115,000
Four thousand six hundred victims represent a capital value of	3,220,000
Loss of time of half the industrial population, say 20,000, for 90 days, at $1 per day	1,800,000
Loss of the profits on the expenditures abroad of about 20,000 refugees, at $50 each	1,000,000
Losses in rents and of the interest on the capital represented by the depreciation of real estate	4,000,000
*Local commercial losses by interruption of business and diversion of trade, etc	5,000,000
Total	$15,335,000

JOHN M. WOODWORTH, M. D., *President*,
STANFORD E. CHAILLE, M. D., *Secretary*.
S. M. BEMISS, M. D.
JEROME COCHRAN, M. D.
M. S. CRAFT, M. D.
SAMUEL A. GREEN, M. D.
THOMAS S. HARDEE, C. E.
R. W. MITCHELL, M. D.
JACOB S. MOSHER, M. D.
W. H. RANDLE, M. D.
LOUIS A. FALLIGANT, M. D.
R. M. SWEARINGEN, M. D.

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*This last item has been estimated by competent authority as high as $10,000,000.

I have voted in the negative upon propositions 3, 4, 5, 10, 18, 21, 22, 25, 26, 27 and 57 for the following reasons:

Whilst endorsing fully the necessity of a well-regulated quarantine to protect the people of this country against exposure to the importation of infectious diseases from abroad, and against the spread of similar diseases in our own midst, I hold the view that yellow fever may be developed by indigenous as well as by imported poison; nor can I express too strongly the conclusions to which this view leads me, namely: that local hygiene is of equal importance with quarantine in checking the spread of the imported fever, and of absolute necessity to the prevention of that of domestic origin. I cannot overlook the fact that whilst fire will explode powder, the fire may be produced in one locality by electricity, in another by the collision of flint and steel, and in still another by striking a match.

LOUIS A. FALLIGANT, M. D.

YELLOW FEVER.

A Paper Read Before the Homœopathic Yellow Fever Commission, at New Orleans, December 2, 1878.

BY DR. LOUIS A. FALLIGANT, OF SAVANNAH, GEORGIA.

Upon the heel of the remarkable decision arrived at by so eminent a body of sanitarians as the American Public Health Association, to the effect that "yellow fever is *never* indigenous along or near the Southern Gulf or Atlantic coast cities of the United States," it seems an almost futile undertaking to offer for public consideration such facts bearing on the nature, and, if I may so express it, the *habits* of this direful malady, that exhibit it to my study as presenting substantial reasons for a very different conclusion—one in which it does not seem necessary for me to make the humorous reservation provided by that distinguished association, "that I may have freedom to change my mind if I see fit."

We have met here to discover the truth, if it be possible, and to base our conclusions upon ascertained facts as exhibited in the nature and causes of the disease—to show from what elementary sources, and under what circumstances and conditions it may originate; in what manner, and to what extent, and by what methods the infection may spread; and if any measures of relief from its dangers and sufferings can be devised, what these measures are, and how they shall be applied.

It is sufficiently well known that in the malarial districts of the South the various types of endemic fevers are more or less prevalent every season, and that the cases decrease in ratio to general sickness as these regions are well drained or remote from inhabited localities. Thus the tenants of plantations in malarial regions "summer it," as it is called, in the pine lands, in the up-country, and amidst the purer breezes of the salt water lines. Some, too, spend their summers in adjacent cities whose sanitary condition has been made good by the drainage of surrounding malarial flats.

My own observations have led me to several separate conclusions:

First—The dry decomposition of vegetation is not injurious to adjacent animal or human life.

Second—The moist decomposition of vegetation gradually increases in danger to adjacent life in ratio to the foul and extensive character of the decomposition.

Third—The influence of running fresh water streams on adjacent human life is increased as the volume of the stream becomes infiltrated with the outpourings of sidelong stagnations and impurities.

Fourth—Deep fresh water ponds apparently confine their exhalations to the production of ordinary miasmatic disorders and bilious fevers.

Fifth—Shallow stagnations, when exposed to the hot summer suns for a considerable length of time, give out disagreeable odors evidently arising from animalcular and insectiverous decomposition therein; and adjacent to this class of stagnations, such as rice fields during the autumn harvest flow, we discover more malignant characteristics in the endemic fevers, attaining the severe grades of congestive hæmorrhagic and swamp fevers.

Place these shallow stagnations on the outskirts of a city, and empty into and diffuse through them the putrid gatherings of human excreta and animal decomposition necessarily composing its refuse, and we have the newly added elements of typhus poison entering into combination with previous malaria producing forces generating the typho-malaria miasm, out of which, under increased swashing and coincident following intense and prolonged heat, rapidly develops that infectious poison exhibiting in the human body the scourge of yellow fever. Your familiar knowledge that gardeners gather the manure from horse and cow lots, and pile it up in heaps near their dwellings, without causing sickness in their families, will assist you in distinguishing the clear difference between excreta of this character, and such as render our sinks for the reception of human excreta more noisome abodes of typhoidal emanations.

How the yellow fever infection is indigenously created I have previously exhibited in my report on the epidemic at Savannah, Ga., in 1876, in which report you will find the following paragraph:

That the odors and gases (shall I say miasms) emanating from our sewers, privies, dry wells, and surrounding filthy bogs and stagnations, (especially the putrid miasms escaping from the Bilbo canal—the sewerage outlet of the city), which were swashed by the heavy rains of June, and left to be acted upon, fermented and developed into new combinations of special, destructive and putrescent malignity by the hot suns of July and August, were the real infectious poisons that spread pestilence and havoc through Savannah in 1876.

Now let us examine the types of fever seen during an epidemic. We see cases of simple fevers, erythismal fevers, bilious remittent fevers, congestive fevers, hemorrhagic, typhoid and typhus fevers, and diffusing its putrid poison through all these types, we recognize the epidemic yellow fever and its urinary and black vomit insignia—evidently exhibiting the varied effects of varied ratios of the admixture of varied poisons upon varied constitutions and temperaments. As the epidemic progresses, its more malignant characteristics increase in ratio to the number of cases from several operative influences:

One: Increased heat of the atmosphere.

Another: Increased accumulation and crowding of cases.

Another: Increased malignity of the infection by reason of cumulative supply from the excreta of the sick and the decomposition of the dead.

And as cooler weather comes on we find the first and second of these conditions tempered by atmospheric influence, and the third limited by the change in the two previous ones.

That is, given the elements necessary to the yellow fever producing combination, namely: animalcular excrementitions and miasmatico-putrid stagnations, swashed by heavy rains, and left in undrained and stagnant puddles, and fermented by succeeding prolonged and intense heat, and you have the mash from which is exhaled those infectious miasms, developing in the human organism its destructive capacity, and producing that formidable disease known as yellow fever, but which I have ventured to christen *La Maladie du Diable.*

After publishing my own conclusions as to the class or combinations of decomposition from which, under favoring circumstances of humidity and temperature, this direful disease might originate, my learned and valued fellow-townsman, Col. John Screven, sent me a copy of his translation of an admirable pamphlet on our subject, by Dr. Chas. Belot, of Havana; and I need scarcely say to you that in writing our separate views neither author had knowledge of the other. It is with no little satisfaction, then, that I refer you to so experienced and distinguished an authority for corroboration of my own inductions.

On page 35 of the translation he says:

"The cause of yellow fever is purely miasmatic, and the air is its vehicle. * * * * The circumstances contributing to the formation of putrid miasms are the mixture of fresh and sea water containing animalcula, the detritus of vegetation, the evaporation of this mixture, great heat, humidity and atmospheric electricity. Miasms once formed may remain latent and innocuous during a period more or less protracted, until a cause, sometimes trifling, sets them in motion."

On page 8, we find the following:

"It is in the commercial quarter where are found in store great masses of food substances, easy to decay, that the greatest number of inhabitants are collected. New comers ordinarily lodge in the midst of this, which, in the rainy and hot seasons, becomes a center of infection. The commercial quarter is placed in the lower part of the city, near the quays, where vessels lay, precisely where the sewers are voided and their emanations received by seamen.

"After a heavy rain these sewers are washed out, but the harbor is filled with putrifying substances, and this perfectly explains why the greatest number of the sick and the gravest cases come from vessels touching the quays and from the stores and commercial houses situated in this quarter. * * * * The harbor and the city are surrounded by villages built on the heights where the air being less vitiated, yellow fever is little known, and the cases presented there are contracted in the city."

I may add from my own observations, and from other observations by Dr. Belot himself, that the disease may be contracted in healthier localities by infection received from cases carried from diseased localities.

Again, on page 10, we find reference to "the evaporation of animal substances mingling in the morning and evening fogs," and "the imminent danger on board of vessels constantly exposed to the emanations from the roadstead and to the mephitic matters which compose their cargoes." "Yellow fever always exists here in sporadic form, even in winter," says Dr. Belot on page 36. "Especially if after a great rain there follows strong heat. For its generation, *ab initio*, heat is essential, and then it rages as long as there are subjects fit to be assailed.

INCEPTION OF EPIDEMIC INDIGENOUS YELLOW FEVER.

I have distinctly limited myself to the discussion of the inception of the indigenous form of this disease for the very good reason that the imported type can always be promptly recognized by the *immediate malignity* with which it assails its victims. Imported yellow fever has in its West Indian ferment-bed already undergone that progressive maturation, if I may so call it, in which the cumulative development of the poison has already attained its stage of matured malignity. "Indeed," says Dr. Belot, "it is always in existence in sporadic form." But in the more northern latitudes of the Gulf and South Atlantic coast the winter temperature is sufficiently cold to dissipate its miasms, and it is not likely to renew itself another season unless unhappily the local conditions combine with favorable seasons to develop anew its putrid germs.

This brings us to the endemic type, the nature of which I will now endeavor to disclose.

I have previously stated that the originating bed of the poison is to be found in such kinds of animalcular decomposition as are to be found in connection with cities located more especially in and surrounded by undrained and stagnant miasmatic regions. These surrounding swampy regions, usually devoid of growth capable of sheltering them from the sun's rays, and infiltrated with organic decomposition, to which has been super-added the typhoidal elements of sewerage washes and decomposing animal and vegetable organisms, are at times, by laxity of municipal vigilance, permitted to exist adjacent to corporate habitation until in some unfortunate coincidence of circumstances, they are slushed and puddled by heavy rains, and succeeding prolonged and intense heat ferments the mass until the atmosphere becomes laden with putrid emanata. Prior to the combined developing fermentation brought about as above stated, the character of the endemic fevers partakes of the nature of typho malarial; but as this fermentation gives out its putrid exhalations, combining further with the evaporations and excreta from the sick, a gradual greater severity is apparent until in scattered cases, like the signal guns of ships in distress, black vomit announces the real character of the scourge. From this time on until the epidemic subsides it is difficult to trace the individual connection of cases because of their rapidly increasing spread; yet no experienced practitioner will have failed to note many instances in which the poison has been carried from house to house and locality to locality until, as in the season just passed, it seemed almost to have spread its wings on the winds.

I am strongly inclined to favor the opinion that it is easier to stamp out an imported infection when we can get at it directly, as when the crew of a vessel are sick, and even perhaps when they may have communicated the disease to a limited number of persons on shore, provided that we have not supplied a pabulum of congenial elementary filth on which its affinitive germs will light like fire to powder. But when the widespread influence of congenial local causes, together with the coincident superaddition of humidity, prolonged intense heat, and as a natural sequence electric tension, have fired the whole atmosphere of a region until endemic cases of the disease crop out from every surface direction like mould on neglected garments, I have little confidence in any heretofore attempted method of suppression, though I am not without confidence that in a calamity so overwhelming as this there is still something that can be done to assuage its virulence and shorten its devastating career.

The first step is to keep our sewers and water-closets disinfected and washed clean by a flow of water of sufficient volume to scour out their contents and do away with their foul odors.

The second step is to prevent the pouring into these water-closets and sewers, unless they can be thus scoured as by a freshet, any of the washings and excreta of cases of yellow fever; for it is plain that the sewers are thereby made the most facile conductors of noxious evaporations.

The third step is to wash out and cleanse the impure stagnations around the city and keep them washed freely with fresh water, so that no re-development of congenial surrounding miasm bed may offer additional assistance to the epidemic impurity.

For a very pointed illustration of this measure, I refer you to my report, in which reference is made to the effect of such a providential scouring during the epidemic at Savannah, in 1854.

To what extent these measures can be applied it is not for me to determine; but of their value I have no doubt whatever. When you recall the cumulative density and malignity of the yellow fever poison, and the fact that the excreta of the sick and dying represent those forms of its morbific reproductive agency most deadly in their nature, I think you will perceive the danger of hoarding its seeds in your sewerage excretary apparatus; from whence they are carried back to every connecting household by way of the conveniently linked pipe-ways. Nor is it at all certain that the germs of the disease may not retain vitality during the winter season and recommence their devilish work as the warmer weather of another summer thaws them into activity.

In illustration of this point I will narrate a few cases from my own observations:

On the 18th September, 1877, I was called to see S. G. Haynes, a merchant of Savannah, residing on Jones street, whose case proved to be a most malignant type of yellow fever with black vomit, followed by a grave typhoid condition, lasting nearly a month. Whilst the city was generally enjoying a state of health, and no other case of the disease then existed there within my knowledge, it became a curious inquiry, how did he get it? By some its cause was attributed to his recent personal supervision of the removal of a dirt-heap in the cellar of his mill, which had lain there undisturbed since the preceding epidemic (1876), and by the upheaval of which it was conjectured that some dormant germs of the disease might have been set free. As no other person or employee about the mill had been infected I was incredulous as to this theory of its origin and directed my own investigation to his residence. The water closet gave out very foul odors, and was connected by a sealed pipe-way with a dry well in the yard; the gases of which closet had no escape except by the connecting pipe back into the house. Into this water closet and dry well had been emptied, the previous season, the excreta from cases of yellow fever, one or more of which had been fatal; and Mr. Haynes, being unacclimated, to the extent that he had never spent a summer here before, offered susceptible food for the grasp of the infection. From this case some ten or a dozen subsequently occurred coming under my care, in connection with which I could directly trace the transmission of the poison from one to the other by personal carriage; but the general atmosphere offered no bed for its epidemic growth, and we escaped any alarming troubles.

On the same street at a later period of the sason I treated the cases of Mr. and Mrs. F. D. Jordan, the latter having an unsettled continued tpye of fever with yellowish complexion, and the former having a classic case of yellow fever, with black vomit. Mrs. Jordan explained that they had recently put on their bed a blanket which had been packed away since it was taken from the bed of relatives sick with the same disease the previous year. I was also informed that a very disagreeable dry well existed next door, into which their water closet pipes emptied, and into which it is certain that the excreta of persons sick with yellow fever the previous fall had also been cast.

The above cases all recovered.

On the same street, opposite Haynes' residence, Alderman W. H. Tison came from New York to his own home a little later in the season. I was informed that he died in a few days with black vomit. He also had one of these dry wells in his yard connecting by sealed pipes with his bathroom, adjacent to his sleeping apartment, and opening into it. I have been unable to learn whether any yellow fever excreta found its way to his dry well the previous year or not.

Did these malignant cases of genuine black vomit have their origin in poison, the vitality of which remained dormant in these dry wells about a year, or did they arise *de novo* from the natural fœcal emanations of the dry wells themselves?

PECULIAR INFLUENCE OF THE YELLOW FEVER POISON ON UNACCLIMATED PERSONS.

During the gradual maturation, or growth of malignity of the yellow fever poison of the endemic type, I have elsewhere stated that the cases of the prevailing fevers are seen to take on severer conditions by an almost season-like gradation, until, after some weeks, black vomit discloses the real nature of the miasm. How differently it affects strangers is a matter with which you are all familiar. Sometimes the first distinct warning we have of the existence of putrid atmospheric malaria is the sudden taking off of these unacclimated persons. When exposed to its influences, especially at nights and near the sewerage outlets, we find captains and crews stricken down with fevers of intensely malignant grades—the severity of the attack increasing as the summer heat condenses into autumn fogs, and being modified in malignity by the more or less putrid character of adjacent noxious evaporations. Another interesting feature of this climatic influence of the poison on the unacclimated is the rapidity with which the infection ushers them into fever. I have known many instances in which these unfortunates were stricken down in from a few hours to a day or two after their entrance in the locality of the disease.

This single fact militates with tremendous force against the doctrine of extremists that yellow fever is *always* imported from foreign countries—in illustration, that unacclimated seamen, who go to the West Indies, remain in some West Indian coast city a week or more, take some days to come to our Southern ports, and spend days at them before they are taken sick, *invariably derive their illness* from miasm with which they had been infected during their sojourn in the former latitude. Unhappily, it is too often the case when such cases occur, as they did at Savannah in 1876, if we can only get at the truth, we will discover that local physicians had previously seen scattered cases of what were considered as typho-malarial fevers, and perhaps an occasional case of a more than suspicious vomito; and the unacclimated new comer presents a more susceptible subject for the development of malignant fever.

By some physicians in Savannah, but more especially by the State Board ot Health, it is contended that as they succeeded in tracing some of the earlier cases to an infection imbibed at or near the Atlantic and Gulf Railroad wharves, and because certain vessels then, or just previously lying at said wharves came (with clean bills of health) from the West Indies, necessarily the disease was brought from there, 'though no proof of that fact could be obtained. But to my judgment the filthy and stagnant condition of the adjacent low grounds, the neighboring stagnant harvest-flowed rice fields, and the immediately adjacent putrid evaporations of the Bilbo canal (the sewerage outlet of the city, which had not been flowed with fresh water for ten months previous,) swashed by the heavy rains of June and the early part of July, and fermented into deadly emanations by the succeeding prolonged and intense heat, afforded precisely the same causes for the development of the disease at these wharves that the similar combination of causes presents for a similar result when the sewers and foul waters defile the Cuban bay, and carry pestilence into Havana's commercial quarter.

QUARANTINE.

The value of a rigid quarantine against the possible importation of the disease from the West Indies and other localities where it may have found temporary lodgment, or exists always in sporadic form (that is, where there is never a sufficiently cool winter to destroy its germs, and where they exist constantly, as a consequence, in that matured degree of development capable of reproducing immediately the malignant and black vomit type of cases), will not be questioned by any prudent physician. It is from this class of cases, introduced into a community, that is developed that malignity of poison spreading havoc and death in its rapid advance.

If the case be introduced into a city in good sanitary condition internally and adjacently, we can almost trace the spread of the disease from locality to locality, until by the aggregation of cases the atmosphere becomes sufficiently loaded with poison exhaled from the sick to create epidemic influence. But if a case of this character, or a poison of this degree of maturation, be introduced into a city in bad sanitary condition internally and adjacently, then we see a lightning-like speed in its direful sweep. It has been sown, as I have already shown, in the congenial soil from which it derived its unclean origin, and it rollicks in recuperative energy like an angled fish speedily restored to its native element.

It becomes a question of the utmost importance *when* a city should be quarantined in whose midst cases of yellow fever have occurred. Looking at this question from the standpoint of those who always want a thousand miles between themselves and the disease, we are apt to heap illimitable blame on the guardians of our welfare, who do not immediately cry out the dismal warning, yellow fever! But looking at it from another standpoint, the interruption of business of all kinds, the wholesale loss of employment, the hunger and desolation everywhere wrought by even necessary precautions against the spread of the infection, I think a wide discrimination should be made in the circumstances under which a city should suffer quarantine.

To be more explicit, I may lay down the following general principles:

First—When a city is in good sanitary condition and by some unfortunate circumstance an imported case of the fever has occurred, and the disease is still limited to a few persons in whom it has been caused by personal exposure to the original or successive cases, but no epidemic condition is apparent, and all the cases have been removed from the possibility of spreading the infection, it is dreadfully hard on a community to paralyze its business, stop its commerce and the means of livelihood of its citizens, and reduce tens of thousands of people to suffering from idleness and consequent want. This hasty infliction of quarantine results unhappily in fostering a practice of concealing or denying ascertained facts for the very good reason that the authorities of a city realize in its full extent and meaning how much misery, apart from disease, unavoidably falls upon a community thus barred from external intercourse. I cannot endorse the indiscriminate infliction of quarantine upon communities thus only punctured, if I may so express it, with a few isolated cases of the disease.

Second—When the disease has developed out of local uncleanness, and the outcropping malignant cases point, as they do, unerringly to the epidemic development, or when an imported contagion lights up the ready kindlings of sanitary negligence, and the disease exhibits an immediate malignity of infection, spreading rapidly from its incipient focus, quarantine cannot be too soon or too rigorously applied; for these are the circumstances out of which come those most deadly miasms carrying desolation and woe in every channel of their course.

YELLOW FEVER AND STATE POLICY.

I am fully aware that in pointing out to the country the possible circumstances under which some of our Southern cities may, nay, have suffered from epidemics of yellow fever caused by their own neglect of nature's sternest laws of cleanliness, I am treading on a State policy which believes it best for the growth of the State that it should not admit the bad name of being within the yellow fever zone. But persuaded as I am that the wisest and most humane course is to recognize possible dangers, and provide intelligent means for thwarting them, I think it best that we should so improve and care for our sanitary condition that when, on the one hand, the imported infection sneaks into our midst, it will not find congenial soil for its fructification; and, on the other, when heavy rains wash our sewerage and garbage accumulations on to adjacent lowlands, and diffuse their putrid elements in sluggish waters, we will not wait for hot suns to test their disease-producing capacity, but provide ample currents for washing away those stagnant and dangerous morasses.

Now, understand me clearly, that whilst yellow fever may exhibit a constant existence, with sporadic illustration, the entire year in Cuba, such is not the case in our Southern cities, nor am I prepared to admit that indigenous epidemic yellow fever will at any season show itself in our latitude unless by official negligence those elementary putrescent accumulations are permitted to gather and exhale, under succeeding favorable conditions of humidity and temperature, the typho-putrid miasms bred by such combination of circumstances into infectious malignity. When such conditions do occur, and such direful results follow, I am well aware to what extent the searcher after facts is embarassed in his investigations, and official incapacity is concealed by a suppression of ascertainable information; and this suppression, I might better say, distortion of the truth, is defended as a correct exhibition of State policy, lest a different confession peril the prosperity of the commonwealth.

I think that the growth of the State, the welfare of its inhabitants, the ties that binds us as individuals in family love and as a nation in mutual sympathy for and interest in each other's weal, eminently require that men holding those fossilliferous and damaging notions should be effectually laid on an everlasting shelf, and their places filled by such as have an earnest regard for intelligent sanitary management.

OZONE AS A DISINFECTANT.

A Paper Read Before the Homœopathic Yellow Fever Commission, by Mr. W. U. Simons, of the Signal Corps, U. S. A.

To the Gentlemen Composing the Homœopathic Yellow Fever Commission:

GENTLEMEN—I beg leave to lay before your honorable body a few ideas of my own on yellow fever, in the hope, that if, in your consideration, anything embodied in them be of practical value, it may be found and used in future to prevent, if possible, or at least, to alleviate, to some extent, the distress incidental to the appearance of this dread scourge in a city.

First then, let me say that my idea is that yellow fever is as much a native of New Orleans as of the Antilles, and that, whenever the atmospheric conditions are favorable, we will have it among us in spite of all the quarantine measures that can be devised, unless something can be done to disinfect the air or render its condition unfavorable to the propagation of the disease. This can only be done, in my belief, by furnishing ozone to the air, as I think that the absence of that gas is the cause of yellow fever becoming epidemic.

As far as quarantine is concerned, the thing is simply absurd, for, admitting that the disease is imported, is it possible to prevent its importation by cutting off our intercourse with infected ports during a certain period of the year, i. e., while they are afflicted, and then during the remainder of the year allowing an uninterrupted intercourse with them; allowing the importation of coffee in bags or sacks, and other articles too numerous to mention, which afford lurking places and shelter for the deadly germ which all, or nearly all, admit to be the source of infection; also to admit of and encourage immigration to this country from those very ports against which we quarantine?

Do not the clothes of these immigrants contain the seed of the disease, and on their arrival here, say in March, or April, after our cold weather has ceased, (admitting that cold is death to the disease), and before our quarantine is established, do they not offer a starting point for the disease to radiate from—and can quarantine regulations of so strict a nature be enforced that it will be impossible in some manner to evade them? Even were it possible to enforce such regulations, could a quarantine be organized against the elements? For until that can be established, we are as much subject to the importation of the germ as ever.

We have records of ashes from volcanoes being carried miles through the air, as in the year 1872, on the island of St. Vincent, one of the West India group, an eruption took place, a large quantity of ashes were emitted, some of which fell on the island of Barbadoes, ninety miles to the east, having traveled hither in an upper current of air, directly over a current blowing almost due west.

In January, 1835, during an eruption of the volcano of Cosequina, Central

America, some of the ashes fell on the Island of Jamaica, 700 miles northeast of the volcano. At the same time ashes were carried westward and fell on the deck of a ship in the Pacific ocean 1200 miles away.

But it may be said that these ashes had an initial force sufficient to elevate them to the height requisite to traverse this distance in the air, but the germs of fever will not be liable to receive this *vis a tergo.*

We have other evidences; for instance, at several places in Southern Europe, Lyons, Genoa, etc., there has repeatedly fallen a fine dust, which was at first supposed to come from the plains of Africa. Ehrenberg, however, found under the microscope that this dust showed minute organisms and dried infusoria; among them several species belonging to the valleys of the Oronoco and the Amazon, and which have not been found in any other part of the world, so that we must conclude that this dust was carried in the upper atmosphere, a distance of over 5000 miles, from the valleys of South America to the shores of Southern Europe, and with an equal facility the germs of yellow fever can be transported from the Islands of the Caribbean Sea and the Mexican Gulf, to Louisiana and the Valley of the Mississippi.

To make a quarantine proof against the importation of the fever by these means, we must prevent the atmospheric currents from moving in a direction that will bring it from those or other infected quarters to us. Thus I think I have shown conclusively that a quarantine is not a prophylactic against yellow fever.

Now, let me give what I believe to be one:

I maintain that when the air is sufficiently charged with ozone the germs of disease cannot exist. I do not know, or pretend to say, whether ozone contains any germicide powers or not, but I base my arguments on the belief that for some time previous to the late epidemic in this city the air was not sufficiently charged with ozone; this I am led to believe from the fact noticed by all of the number of calm days we had during the spring and summer, also that there was a less number of thunder storms during the same period than we usually have at that season of the year, these being our most prolific sources of obtaining ozone. As a consequence, we were deficient in the supply of that gas.

It is known that one part of ozone will purify or disinfect three million parts of putrid air, and I claim that whenever our supply of ozone sinks below that proportion, of one part in three millions of air, yellow fever is liable to make its appearance in New Orleans, from the germs already here lying, as it were, dormant in some protected place, where during the latter part of winter, and early spring, (the period at which our atmosphere is most plentifully supplied with ozone) the purifying air has not been allowed to affect them.

What I believe will eradicate the disease from our land, or any other, is a plentiful supply of ozone to the air, sufficient to destroy these germs, or anything else that breeds the disease—in fact, a thorough disinfection of the air by ozone.

The Oxford *Disinfecting Minute* says: "No disinfection can be thorough if a man can live in a room whilst it is going on." And J. M. Bryan thinks that "the only true disinfectants are those which produce an atmosphere or vapor, in which neither we nor any other life can be sustained."

I disagree with them in this, that I believe a disinfectant may be used to such an extent that it will kill the lesser animals, animalculæ, germs, or anything else that causes the fever, and man may exist in it without injury; in fact, with benefit, as being a larger, stronger being, possessed of more vitality, and able to inhale with the disinfectant gas enough oxygen for his support.

Moreover, Mr. Dewar and Dr. McKendrick, in their experiments, reported to the Royal Society of Edinburgh, December 1, 1873, allowed animals to remain in air charged with about ten per cent. of ozone, and they perished; yet often in the laboratory the air is charged, I believe, to the same extent with ozone, and we experience certain unpleasant feelings, but nothing severe enough to produce death.

Therefore, I am convinced that ozone may be used as a disinfectant to rid the air of these germs, without injury to anything else. In fact, I believe that instead of yellow fever being killed out by the frost, as is generally supposed (from the fact that it disappears, in most cases, about the time our first frost comes on), that its disappearance can be better accounted for by the theory that the deozoneized air, that we had been breathing during the epidemic, is being recharged with ozone by the storms of autumn, and the increasing winds of that period of the year, that generate electricity by the friction of their movement, and consequently ozone. For were it not for something of this kind, and were the fever only stopped by frost or cold weather, they would be in the full enjoyment of it the year through at Key West, Havana and other points where frost never occurs, which we know is not the case.

As to the means of generating ozone, or the method that might be employed for manufacturing it in a sufficient quantity to act as a disinfectant, I am not well enough posted on the matter of its manufacture to know how it might be done, but I feel confident that if it is tried it will prove a success, and surely some way can be devised for generating ozone enough to supply a deficiency at any time of that gas in the air, if it will eradicate this plague from our land.

YELLOW FEVER.

Will It Prevail the Coming Summer?

BY J. P. DAKE, M. D., NASHVILLE, TENN.

Being frequently asked if the yellow fever will probably scourge our Southern country again this year, and seeing frequent predictions that it will, in various papers, I think it proper for those who have given some study to the history and habits of that disease to make public utterances on the subject.

The prevalence of a wrong opinion must prove disastrous, not alone to the financial interests of the regions involved, but also to the domestic comforts. If a visitation, like that of 1878, is to come, the residents of many cities, and a broad region of country, will very wisely arrange for a suspension of business and a resort to places of safety; and such arrangements cannot be made without heavy financial losses and serious family inconveniences.

In considering the probabilities—I say probabilities, because the determination of *certainties* is not possible in this case, we must first look after the causes of yellow fever so far as they have been approximated.

First Cause—Quite varied are medical opinions as to the essential cause, some claiming a single germ, or class of germs, living and susceptible of indefinite multiplication, originally imported into our country, and each time imported afresh when the disease is epidemic; and others claiming that there is no such specific germ, but rather a change in the chemical constituents, an allotropic character of gases in the atmosphere where the disease first appears.

The weight of evidence, upon unbiased minds in the profession, has led to the opinion that there is some truth on both sides, and that neither view alone can be safely accepted.

That there is a *specific germ* and that it is *living*, and exceedingly *prolific*, even though not discerned directly by the senses, aided by the microscope or other means, is well attested by experience and observation.

But, that such germs, wherever taken, and under whatever circumstances planted, can grow and multiply, and give rise to yellow fever, is not sustained, but emphatically contradicted by facts.

Again, the idea that the specific germs have had a fresh importation from foreign parts, each time an epidemic of yellow fever has prevailed in our country, is an unwarrantable assumption. Those germs have been domesticated, or have found secure repositories where neither frost nor the efforts of art have reached and destroyed them. And, why not?

Consider the bodies of those dying with the fever, full of the germs, wrapped in clothing and deposited in tombs, at New Orleans, and in graves elsewhere, beyond the reach of frost and fumigation. If nature and art have successfully destroyed their vitality in houses and boats and coaches and beds and clothing, they have not reached them so readily in the tomb and the habiliments of the grave.

How long their vitality may be preserved has not been determined. In the earth, where, by reason of abundant moisture and a free circulation of gases, chemical changes are more rapid, they may be destroyed in a few months; while in the elevated tombs, as at New Orleans—the fittest places for their survival—they may remain unimpaired for years.

The probility is that, at Memphis and other points where the dead are buried in the earth in alluvial soil, the germ organisms would retain the sporulating or reproducing property but a short time.

But, allowing the specific cause to be present, by survival or importation, as I have intimated already, it does not signify that yellow fever must result.

Corn, however well preserved, does not reproduce itself in the farmer's crib; nor did the grains of Egyptian wheat, which show vitality while resting in the wraps of the mummies for three thousand years. They require a proper soil and moisture and heat to bring them into active life and growth and reproduction. And exactly so the seeds of yellow fever, whatever their potential ability, whatever their number, and however distributed among the inhabitants of a locality, will be as harmless as the dust from a clover field, unless the conditions essential to their germination and growth are present.

This thought leads us to the

Second Cause—Much has been said and written about the influence of filth in the production of yellow fever. It has been overrated and under-rated. One fact, however, must be accepted by all, that accumulations of filth *alone* never occasion, much less cause, that disease. It is a question, how much they affect the severity and special direction of it when prevailing in a given city. In the late epidemic some of the cleanest parts of New Orleans suffered more than some of the dirtiest. Other factors than apparent filth determined the difference.

But the truth is generally recognized, that yellow fever never begins its march save in a *crowded community.* And by a crowded community, we understand a people having an atmosphere to breathe, and work, and sleep in, deteriorated especially by animal excreta and remains, undergoing decomposition. An epidemic, starting in such a place, may gain force and persistency sufficient to invade other communities having local influences less favorable to its birth.

But the *specific germs* and a *crowded community* may dwell together for months and years without an epidemic of yellow fever, till another factor is added, namely:

Third Cause—A tropical summer. And by a tropical summer, I mean, *a steady, high temperature, without rains or winds.*

High temperature increases the noxiousness of organic debris, and especially the growth of the lower orders of animal and vegetable life, which feed thereupon and then become deleterious to human health by reason of their presence in food eaten, fluids drank, or air breathed.

The absence of rains and winds favors the accumulation of organic debris, of pestiferous organisms, and, above all, creates a want of *ozone,* the great destroyer of atmospheric impurities.

No cases of yellow fever occur in the West Indies, in South, Central or North America, nor, indeed, anywhere else, without the concurrence and co-operation of these three causes—*the specific, the local, and the atmospheric.*

Nashville escaped in 1878, not because none of these factors were present—not because none of the germs were brought here, and not because our city was lacking in filth (though it was faithfully cared for by our Board of Health), but because *the atmospheric conditions required were not here.* We had a high enough temperature, but not the absence of rains and winds.

We had less of ground and sewer exhalations to moisten an atmosphere already charged with purer moisture, and we had a much larger supply of ozone, generated by winds and storms. Heaven favored us and we were saved. I should further say, in regard to a summer favorable to yellow fever, that it is generally preceded by a mild winter and wet spring. It was so in 1853 and in 1878.

What, then, is the probability of the concurrence of the causes named, for the production of yellow fever during the coming summer, in this country?

Prevention.—From what has been mentioned, and for reasons not to be set forth in a brief article, it is fair to assume that very few, if any, germs of the disease will survive outside of New Orleans till the coming of hot weather.

If cases occur they will be sporadic and scattering, such as sometimes follow an epidemic. If Memphis, by chance, shall have some germs, with a sufficiency of the local cause, the occurrence of epidemic yellow fever will depend upon the coming of a tropical summer, such as I have described above. Two such summers rarely come in succession in any part of our country. We may have the high and long continued heat, but not the calmness and dryness of atmosphere. The chances of escape, then, during 1879, are exceedingly fair, in all the country, outside of New Orleans, and by no means unfavorable there.

While that city has, long ago, had yellow fever two and even three years in succession, it has never been very prevalent nor fatal one year after another, Few cities, with a large population huddled in close quarters, with narrow streets and few gardens and trees, can be kept so clean as not to furnish sufficient *local cause*, especially in the absence of rains and winds and the resulting ozone. Yet much can and should be done, by efficient sanitary measures, to clear away accumulating filth.

The *specific cause* may sometimes be arrested by a rigid quarantine, shutting out personal effects, clothing, bedding and persons having the fever, and by the thorough disinfection of boats, cars and carriages at designated points, except when the germs are conveyed, as they sometimes seem to be, by currents of air, from place to place.

The *atmospheric cause* is above and almost independent of human agency.

The temperature of the air in general may not be changed; but not so its calmness and dryness. By various means movements may be induced, concussions effected, and healthful moisture supplied, in localities where particularly needed. When New Orleans is converted, as she may and ought to be, into a Venice, by numerous and well filled canals of flowing water, and when the stagnant air of crowded places is driven into motion by the firng of torpedoes and guns and other means, the evils of a tropical summer will not be so much dreaded there.

In conclusion, I am persuaded that, the weight of facts and reason declare against the probability of any yellow fever epidemic in this country during the year 1879.

PROTECTION FROM EPIDEMICS AND NATIONAL AND INTERNATIONAL QUARANTINE.

BY BUSHROD W. JAMES, A. M., M. D., PHILADELPHIA, PA.

It is undeniable that our quarantine and quarantine laws, as they exist, are defective and insufficient for thoroughly carrying out the objects designed. In this country it is left to the several ports and cities to protect themselves through their health boards and by lazarettoes, under State authority. Even in other countries the plague, Asiatic cholera, yellow fever or any other epidemic form of disease, may be transported a long distance, either by sea or land, directly from an infected spot to the portals of the most healthy towns and localities, and the nation to whose borders such death-dealing infection is carried has no adequate regulation to prevent a calamity which may end in the loss of many thousands of its citizens, and cause commercial disaster to the amount of millions; while the government from whence the cause of all this loss emanates is not held in the least responsible in this matter—not even to the value of a farthing.

Why? Because no international laws exist to guard humanity against the spread of these dreadful infections. Safeguards and enforcements have been legislated in every other direction but this, and it is strange that this, one of the most vital to all, has been neglected.

Should one seaman or a soldier, or even a private citizen, be killed or injured, or insulted by another nation, during a time of peace, reparation is at once demanded by the home government of the individual so injured; and some restitution, explanation or apology is obliged to be rendered, and accordingly is furnished in accordance with international law by the national authorities.

of the offending party; but, in a matter where so many lives and so much property may be involved, and such extended suffering entailed, as the importation from one country into the port of another of the seeds of a pestilence, nothing even seems to have been thought of, or any measures taken, or laws adopted in this direction among the great, intelligent and civilized nationalities of the world.

The experience of last summer in our own country with yellow fever; the lessons which European nations are now learning over again with the plague, which is rapidly making its way towards the great lines of western travel, business-marts and trade centres, and the numerous epidemics of the Asiatic cholera in past years, in various countries, including our own, should certainly awaken all to the establishment, not only of judicious national quarantine laws, but they should take steps at once towards having called together a conference of sanitary delegates from every interested nation, looking to the formation of such a code as would make it to the welfare of every nation to curb an outcropping epidemic within its own borders, and thus always endeavor to check it in its incipiency. Should it, perchance, become wide-spread over such a country, these statutes should be so framed that such an infected locality shall find it to its own interest to retain all exposed persons, not only within the boundary of its own territory, but within the limits of the infected districts, and further, that they and the sick shall be kept under good sanitary surveillance and care until the epidemic has passed.

It is the wholesale rush of persons who have been exposed to an epidemic poison that causes its extended sway and destructive results.

I do not want to be understood as desiring to compel all the inhabitants of an infected city to remain there and perish; but when the atmosphere is poisoned by an epidemic and all are exposed, a certain district a few miles outside the circumference of the city limits should have a *cordon sanitaire* enforced beyond which infected persons could not go until after a sufficient number of quarantining days have passed.

The flight of large numbers of persons who have been exposed to an epidemic, by through trains, to distant cities, or as in the case of Europe to neighboring countries, is where the principal danger lies of quickly and extensively spreading any active epidemic.

The United States government should take the iniatiory step in the matter of establishing international quarantine regulations. These laws should be prepared on the principle of the golden rule, and of the greatest good to the greatest number; and if this can be accomplished probably the principle of financial and other responsibility on the part of the government that allows a vessel to leave any of its ports with sailors or passengers who may have been exposed to one of these highly dangerous and wide-spreading epidemics, would be likewise attached.

We in this country have little or no protection, while these dire epidemics are allowed to come to the very threshold without let or hindrance. If the quarantine authorities at their stations are enabled by their herculean efforts to keep it from spreading after its arrival there, it is all well, but if it reach to the adjacent city and almost decimates it, the unjust and unmerciful importation then becomes apparent.

Now no great harm can result from exposed persons remaining in infected districts, and the compulsory return of such to these places during the epidemic seems to me but an act of mercy and justice to friends and neighbors beyond such districts in not carrying the disease to them; and in this manner it will not only save much affliction and suffering, but probably preserve the lives of their friends, and those who are near and dear to them, either by the ties of relationship or friendship. A rigid encircling of an infected spot, by the government, in which an epidemic originates, and the strict quarantining by international law on the part of other governments, against all infected persons and articles of traffic from a country in which such an epidemic is raging, ought to effectually check it from spreading and confine it within narrow limits. It may inconvenience a great many people, and it may be a loss of some money to business firms, but this is trifling compared with the dire results of an unbridled scourge.

Just what these international laws shall exact, and just what penalties are to be enforced for their non-fulfillment will be a matter for earnest, deliberate, deep thought and statesmanship; but they should be so framed as to induce every country, by the most stern enactments, to prevent contamination and injury to any of the citizens of other nations, except those on the infected spot, as well as to the nations themselves.

If the National Commission of Sanitary Experts suggested by the Homœopathic Yellow Fever Commission of 1878, should be appointed by the government, it will no doubt be their province and pleasure to suggest to Congress this all-important subject; and probably in conjunction with similar commissions appointed by other governments, they will be enabled to frame such rules and laws for the adoption of the various nations as will bring security from the outbreak and spread of these epidemic and ravaging maladies, which so terrify the people at large and depopulate communities. Countries should legislate harmoniously for each other and not against. While we live under the present form of quarantine, and as long as this insecure system exists, I can but urge on sanitary authorities, not only the continuance of the general disinfecting agents for contagions at large, but also the use of specific agents for special contagions, such for instance as, intense cold for articles and vessels infected by the yellow fever poison, intense heat for those infected with variolous poison, chlorine gas probably for Asiatic cholera, and the destruction by fire of infected property emanating from the plague, etc. So with all contagious epidemics, first ascertain the best agent for specifically annihilating each separate disease-producing cause, and then apply them to the emergencies as they may arise.

It has been a wonder to me that while so many different quarantine authorities and organizations are in existence all over this and other countries that they all adopt the same means, inefficient as they often-times are, to thoroughly accomplished the desired end, that no rivalry exists among those in charge of these quarantine stations in the matter of ascertaining better and more efficient agencies and means for effectually checking or stamping out these contagious scourges when thrust upon them.

A little more thought and mental energy put into this subject by these able men may develop for this age more astounding wonders than the telegraph, telephone or phonograph.

These things will not dawn upon us of their own accord, we must delve after them; thought after thought must be originated and pondered over, ex-

periment after experiment must be performed and tested, persistent and close observation must be carried on until clear, definite and practical results are obtained, for they are obtainable.

CHARCOAL AS A DISINFECTANT.

It is usual, during every epidemic, to use all kinds of disinfectants. Chloride of lime, common lime, tar burnt in the air, and carbolic acid, stand at the head of the list. Can any one show where they have ever done any good? Is there any proof that they have ever prevented, quelled or even ameliorated an epidemic? They have been endorsed by the highest authority of the "regulars," and have certainly, in many places, been fairly tried. The result is, that the old school have fairly banished them since the ordeal of 1878. That some are disinfectant cannot be denied, but their effect upon yellow fever is about imperceptible, certainly not even noticeable. The only record carbolic acid has left is a monument in the shape of a multitude of little children, who were "fumigated" into a better world. We want a disinfectant, however, and science gives us one which is cheap and effective—common charcoal. If the poisonous gases from decaying animal matter, excreta, etc., are active factors, either in the production or spread of yellow fever, charcoal is certainly the remedy. It has a peculiar affinity for all noxious gases, and has the power of absorbing a million times its volume of gaseous miasma. This knowledge is not new—these truths have been recognized one hundred years, but have never been utilized in yellow fever. Dr. Constantine Hering, of Philadelphia, over twenty years ago advocated its use, and supported his theories by practical experiments. Before I enumerate them I would give some instances of its powers of absorption: Let a cat, dog or chicken fall into a cistern containing five thousand gallons of water; in a few days it becomes putrid, which is generally the first indication we have of the cat-astrophe. The water is unfit for any use, as it is too offensive for laundry purposes even. Now this water can be rendered as pure as ever by lowering into the cistern a little sack of coarsely powdered charcoal. That little hatful of charcoal will search out every particle of effluvia and simply absorb it—not destroy it. Now the quantity put in is generally half a peck, but we cannot tell how small a quantity will answer the purpose, as it would necessarily be slower in action.

Dr Herring says:

> "Put a dead rat into a small wooden box, upon a layer of charcoal about three inches thick. Fill the box so there are about six inches of charcoal over the rat. Every one knows what a terrible stench will come in due time from a dead rat. Place this box upon the main table of the council room, and let every one of the rulers of the town take a smell at it every day. If they perceive more than the common cellar air, they have only to change the upper layer of charcoal, and all the smell will have gone in a few minutes. The rat may rot in a parlor without any one perceiving it. In a few weeks, nothing but skin, hair, sinews and bones will be left.

Bodies, packed in charcoal, would be rendered harmless in burial, removal, or transportation, and does any one deny the fact that yellow fever funeral spread the disease? If we wish to ever pander to the tastes of the ignorant, the requisite for disinfectants is a substance which has a "loud" smell.

Explain, as you will, they cannot understand how the inodorless, simple charcoal will grasp and hide away forever the fetid matter that comes on the air, within its radial distance. Scatter chloride of lime or carbolic acid, however, and if they do not have a great influenza, they are satisfied with the smell, and feel safe until the odor is exhausted. Charcoal has never had a fair trial. If one man has tried it, he could not expect to reap the benefit, unless he undertook to disinfect the whole city. But on board a vessel it is different. When the vessel is disinfected by it, the outside air does not rush in laden with the poison, hence a comparatively small quantity can be used with the most gratifying results. Were the day to come, however, when a whole city would scatter the little black lumps with a lavish hand, the result would astonish the public. It has, as I before stated, a peculiar affinity for gases emanating from putrescent animal matter, and not so much for vegetable. Yellow fever seems to be independent of common malaria, but the former is a very powerful factor in its development, so we can find no substance so effective as an absorbant as charcoal in yellow fever. As to direct testimony, I beg leave to refer to a series of correspondence, bearing directly upon our subject.

On the 2d of September, Dr. C. B. Knerr, of Philadelphia, wrote to Dr. W P. Wesselhoeft, in regard to some data on the charcoal subject. This is the reply:

BOSTON, September 6, 1878.

Dear Doctor—Arriving here on the 3rd of September I found yours of the 2d. I wrote to Capt. Pope, of the Navy, and enclose his reply herewith. I am afraid it was his father who told me the circumstance of the charred vessel, which I now remember telling Dr. Hering. I enclose Capt. Pope's letter. His father, Commodore Pope, is dead. I have written to Chief Engineer Macomb, mentioned in Capt. Pope's letter, and also to Capt. Butler. If I hear anything I will immediately inform you. Very truly yours,

WM. P. WESSELHOEFT.

C. B. Knerr, M. D., Philadelphia, Pa.

Below is the letter of Dr. Wesselhoeft to Capt. Pope, and Capt. P.'s reply:

BOSTON, September 4, 1878.

Dear Captain—I do not remember if it was you, Macomb or Butler, or perhaps your father, who, several years ago, told me of a vessel in the United States Navy which had been charred inside by fire, then repaired and sent to some station where yellow fever was epidemic, and that of all the vessels there this one alone escaped the infection. I enclose a letter received from Dr. Knerr, the son-in-law of our old nestor, Dr. Hering, which explains itself. If you can remember or find out anything regarding this occurrence, please let me know without delay, returning with your answer Dr. Knerr's letter, and also this, my note to you. With kind regards to Mrs. Pope, yours very truly,

WM. P. WESSELHOEFT.

Capt. Percival Pope, Navy Yard, Charlestown, Mass.

REPLY.

NAVY YARD, CHARLESTOWN, MASS.,
September 5, 1878.

Dear Doctor—Your note and enclosure reached me yesterday. Sorry I can't give you some information relative to the matter. It must have been my father who told you of it, and it probably happened many years ago, as we have no account of it here at this station. If it was Butler, he is at Portsmouth, N. H.; or Macomb, he is on the U. S. steamer Powhatan, at Navy Yard, New York.

Yours truly, P. C. POPE.

Dr. Wesselhoeft, present.

Dr. W. then wrote to Chief Engineer Macomb, and wrote again to Dr. Knerr, enclosing Mr. Macomb's reply.

BOSTON, Sept. 10, 1878.

My Dear Doctor—I enclose letter from Chief Engineer Macomb, by which we come a little nearer to the story. We have at last found out that the bilge-water was always pure and clean, and the Connecticut always full of foul bilge water. Now I shall write to Farquhar, at Annapolis, and perhaps he knows something of the story of the yellow fever. As soon as I hear from him, I will send you his reply. I am sorry the matter is taking so long a time, but it cannot be helped, as I see, and I only hope that Farquhar will know something more definite about the yellow fever. Love to the Herings and your wife. Yours very truly, WM. P. WESSELHOEFT.

C. B. Knerr, M. D., Philadelphia, Pa.

LETTER FROM CHIEF ENGINEER MACOMB.

FLAG SHIP POWHATAN, NAVY YARD,
BROOKLYN, N. Y., September 8, 1878.

Dear Doctor—Your esteemed favor of the 6th inst., with enclosed letter from Dr. Knerr, was received last evening, and I hasten to reply, as well as I remember the circumstances of the case of the burned vessel, although I do not remember whether it was Capt. Pope or myself, who informed you of the case. Perhaps it may have been my brother-in-law, Com. Farquhar, as he was on board of her with Capt., now Rear Admiral S. D. Trenchard, commanding. The circumstances as far as I have heard were these: There were two steamers, the "Connecticut" and "Florida" built in New York, in 1861, I think for the Southern trade. They were lying alongside of the wharf, having their machinery placed in them. The "Florda" was burned, the inside timbers being only charred. She was raised and re fitted, and her name changed to the "Rhode Island," owing to the existing circumstances of the war; and she and the Connecticut were sold to the government for war purposes and transports, being sent on the blockade. The Rhode Island was always a healthy ship, never having any smell of bilge water in her—on the contrary, the bilge water was always sweet and clean, whilst the "Connecticut" was full of bilge water and very offensive, as I made a passage on her from the mouth of the Mississippi to New York. Capt. Farquhar informed me that the bilge water of the "Rhode Island" was *always pure and clean* and *never* offensive, which is very remarkable in the sweetest and cleanest of ships. I think if you would write to him at Annapolis, Md., he could inform you more fully in relation to the sickness on board, and state the case more definitely and clearly, as he was executive officer on board of her for more than a year; but I remember distinctly hearing him state in regard to the bilges of the ship being always sweet and clean, and I have no doubt but that it was owing to the charred timbers—both that and the healthy condition of the ship. When I had yellow fever, at the Navy Yard, Pensacola, Fla., I had (before I was taken down) several boxes (such as wine boxes) of charcoal placed in my room (under the bed, one on top of the wind-rope, and in the closet) which, no doubt, helped purify the air in the room, as there was never that dreadful yellow fever smell in it, and I was very sick with it, too, it being twenty-one days before I was able to get out of my bed. I wish I was able to give you more data in regard to the "Rhode Island," but what I have given you, you can rely upon. Perhaps, Capt. Farquhar will give you more particulars, which would enable Dr. Knerr to make out a good case, so I think it well to write to him, as he is now at home at Annapolis, Md. I will close by saying, with Dr. Knerr that I hope you have enjoyed your summer "cruise," (as we would say) and that you and yours are all well. Please give my kindest regards to them and to Dr. Nichols, and believe me, sincerely and truly yours,

DAVID B. MACOMB.

Dr. Wm. P. Wesselhoeft, 52 Boylston st., Boston, Mass.

P. S.—I enclose Dr. Knerr's letter.

Further correspondence with Commodore Farquhar developed the information sought, as the following shows:

BOSTON, September 13, 1878.

Dear Doctor—I take great pleasure in sending you Commodore Farquhar's letter, just received. Since writing to you I have had an opportunity of speaking to Capt. Percival Pope, U. S. Marines, who said that he had used charcoal in his berth, carried it on his person, and brushed his teeth with it during a fearful epidemic in the West Indies. He had occasion several times to be with persons dying of the disease, in rooms where the stench was so terrific that he would have to go out of doors every few minutes to get air to breathe. He remained perfectly well during his entire stay. He had the charcoal changed frequently. With much love for your wife, and the Herings, I remain very truly yours, WM. P. WESSELHOEFT.

COMMODORE FARQUHAR'S LETTER.

ANNAPOLIS, Md., September 11, 1878.

My Dear Doctor—Yours of the 10th duly received. The facts of the case of yellow fever and charcoal are as follows: During the late war I was at one time attached to the United States steamer Rhode Island, Captain (now Rear Admiral) S. D. Trenchard. This steamer was formerly a merchant steamer, built to run between New York and Charleston, S. C. By some means or other, she was twice burned, nearly to the water's edge, and in rebuilding many of her charred timbers were not replaced. She was the only vessel that I ever served in whose bilge water was not offensive. In the summer of 1863, while at Cape Haytien, Island of Hayti, we received from the United States steamer Alabama an engineer officer. At the time this vessel had the yellow fever of a most fatal type on board. In a few days this officer was taken sick, and after an illness of two days died of yellow fever. This was the only case we ever had. You can draw your own conclusions; mine were that the charred timbers and sweet bilges prevented the disease spreading. Mrs. F. joins me in very kind regards. Very truly yours, N. H. FARQUHAR.

Wm. P. Wesselhoeft, M. D., Boston, Mass.

The three last letters explain themselves:

BOSTON, September 17, 1878.

Dear Doctor—I enclose you a note just received from an old lady who is interested in Dr. Hering's researches for prevention of yellow fever. Show him the note, and if he can make any use of it I will be very glad. If we could only find out the book it would, of course, be of more value, but I have known the old lady for many years and she is perfectly trustworthy.

Very truly, yours, WM. P. WESSELHOEFT.

C. B. Knerr, Philadelphia, Pa.

DEXTER HOUSE,
BOSTON, September 13, 1878.

Dear Doctor Wesselhoeft—Mother remembers having read, many years ago, in some work—she cannot remember what, (but it was certainly not a work of fiction—a conversation between two sea captains, who had been for a long time trading up the rivers on the western coast of Africa, wherein one complained of the great loss of life, resulting from the west coast climate, to the whites in his crew, and declared that he had been obliged, in his latter voyage, to lie outside and wait for native boats to bring off his cargo. The other then said: "I have traded up the West Africa rivers for more than a score of years, and have never lost a man in the worst locality, nor most unhealthy season, which I consider due to the use of pulverized charcoal, having always carried a large quantity, and obliged every man on board to take a teaspoonfull, night and morning." Mother cannot tell you where she read this, or state any further particulars which might lead you to the discovery of the work; but of this exact statement she is perfectly positive. Very truly yours,

LIZZIE M. WOOD.

In answer to an inquiry if the Government had ever promulgated an order as to the use of charcoal as a disinfectant, Dr. Wesselhoeft answered Dr. Knerr by the following letter:

BOSTON, Mass., September 20, 1878.

Dr. C. B. Knerr, Philadelphia, Pa.:

No officer whom I have consulted knows anything of an order being issued to use charcoal on board naval ships, but several officers in the navy have used it to my certain knowledge, and I think none of them would expose themselves to an epidemic again without it. Yours truly,

WM. P. WESSELHOEFT, M. D.,
52 Boylston street, Boston, Mass.

We have, anyhow a few facts to draw from, and added to this testimony will be more soon, which will place charcoal at the head of the list of disinfectants, or rather will banish all, as an absorbent of deleterious gases. In the report of Dr. Joseph Holt, of New Orleans, where he portrays the horrors of the Potter's Field, we can imagine what an immense deal of good a few bushels of charcoal would have done, on each shallow grave, toward absorbing the frightful, fetid odor emanating from the bones of the poor wretches, which a large city refused to hide from public gaze.

Now, if charcoal had a nice strong smell to it, like that eminent humbug, carbolic acid, the acute public might grasp the idea of its disinfecting properties as especially adapted to yellow fever poison; but it will be a task to make three men in one hundred believe that the innocent black lumps could do any good. Let us make an estimate of what the cost would be to a city the size of Vicksburg. We have 14,000 inhabitants, and there are, consequently, about 1400 houses, allowing ten souls to a house (owing to the crowded manner in which negroes live). Ten barrels of charcoal to each house would be an abundance, Now it retails at twenty-five cents per barrel—but in large quantities I would like to have a contract to furnish it for ten cents. So it would take 14,000 barrels of charcoal to thoroughly disinfect the city, streets and all. This would amount to the stupendous sum of $1400. But, if the Board of Health were to recommend it, one-half of the city would be sprinkled with it at private expense, so it would cost $700 to disinfect the city of 14,000 inhabitants. I would like to know what was the cost of the tar, carbolic acid, lime, etc., used in Vicksburg in 1878. The people can testify as to its effect in stopping the epidemic. Gentlemen, give the little black lumps a trial, and do not condemn it as useless, because one house failed to keep off the yellow fever by its means, when it would, by a liberal calculation, have taken 14,000 barrels to absorb the quantity of poison. Charcoal does not have an affinity for malarial gases, nor is it thought that yellow fever is the least dependent on common malaria for its origin, *but it is thought* that decaying *animal* matter is the greatest factor in indigenous yellow fever, and we know that charcoal is the greatest absorbent in the world for the gases emanating from putrid animal matter or human filth. We cannot reasonably expect 1878 to be our last year of yellow fever, and to prepare for another epidemic should be the ruling thought while we are healthy. Cannot some scientist make a series of experiments with charcoal, and by them determine when it is effective, how long it is so, and in what proportion it is needed?

Now another word about charcoal: Paris is the greatest city in the world in regard to public works, and among them her sewers are noticeable. You can ride in them in a boat and not perceive an odor. Still these river-like sewers drain the whole filth of the city. But the garbage and solid matter is strained from the watery and the fluid matter, then purified by passing through immense filters of *charcoal*, which take up all of the fetid odor and poisonous matter. The solid refuse is dried and cremated in self-feeding furnaces, and the residue made into artificial stone for pavements. Can the United States not learn a lesson from our French neighbors in cleanliness. It seems to be a great undertaking, but charcoal, garbage furnaces, engineering skill, and the United States Treasury, will accomplish wonders in New Orleans, the notable point, and other cities can follow at one-tenth the expense.

YELLOW FEVER.

A Treatise on the Disease, and a Concise Method of Treatment.

BY A. O. H. HARDENSTEIN, M. D., VICKSBURG, MISS.

The past year has been a terrible one to the South. Yellow fever has fearfully depopulated, not only the cities, but also the interior. It spread its terrible ravages to remote and healthy locations, formerly blessed with immunity from the scourge. Opinion as to its infectious or contagious character can hardly be divided now. In proof, I point to the facts of persons fleeing from an infected to a perfectly healthy locality, and the pestilence following in their wake—with different degrees of severity—often very violently. I, myself, have been in at least twelve epidemics, encountering it in its worst forms in the West Indies, Bahia, Acapulco, Rio Janeiro, Buenos Ayres, Havana and Mexico, and in different parts of the Southern coast of the United States; but, although blessed with immunity and fearless of contagion or infection in these localities, I was overpowered in 1878. My constitution might have resisted even this year, but extreme fatigue, bodily and mentally, together with my advanced age, paved the way to infection.

The Causes of Yellow Fever.

This is the mooted question, and I incline to the belief of the Homœopathic Commission, when they present a double cause—importation and spontaneous production. The spontaneous development of yellow fever requires not one cause or factor, but a multiplicity. This is treated of so extensively by the Commission and the paper of Dr. Falligant that there is no new field for thought. But I would like to mention a curious fact, which may throw light upon the subject.

In cholera epidemics, our planetary system is always near the constellation of Persus, where hydrogen abounds. We had been nearing it since 1828. All the years from 1828 to 1833, the years of contact with the hydrogen, were years of cholera over the whole world. If hydrogen abounds in one part of space, carbon must in another, and if hydrogen has an influence on the globe, carbon must, also. When cholera appeared, in the years named, intermittent fevers disappeared only to re-appear when the dread disease passed away. Is yellow fever one of the consequences of a preponderance of carbon, and, therefore, an absence of ozone? Ozone was notably absent in 1878; carbon must have been in preponderance. We had yellow fever in the Western hemisphere—in the East the plague. Both are typhus, and both are treated by nearly the same remedies, homœopathically. It is singular that arsenicum, carbo veg., belladonna, aconite, lachesis, anthraxin and ipecac are the remedies most successful in both diseases. I encountered the plague in Egypt and Asia Minor, and used the above remedies, with the exception of lachesis, which had not been proved in 1830. We have to thank Dr. Hering for this remedy, which has a wide and useful sphere of action in so many diseases of mankind. A great many symptoms in the plague, as well as in yellow fever, point to cadmium sulph., which has, undoubtedly, relieved much suffering in Vicksburg, and saved many lives, at the hands of myself and Dr. Harper, to whom I recommended it, he using it with most gratifying results. More properly, I should speak of this remedy in another place, so I pass on to the subject at issue. There is a fact in my possession which is a strong argument in favor of the theory of spontaneous growth or production of yellow fever. Near Bastrop, La., lived a family who were seized with attacks of a pernicious fever, which was not amenable to treatment. One after the other they died, and the allopathic physician in attendance pronounced it yellow fever. He, himself, was attacked with the fatal malady and gave up his life. Believing it to be the fever, he had no communication with the rest of the neighborhood, and the spread was stopped. Now the whole of the United States has heard of the shotgun quarantine of that section of country, and their subsequent escape. Ministers, priests, boys and men stood picket night and day, forming an impenetrable cordon around whole parishes. A stranger did not dare show his face, for no one could answer for his life if he tried to run the blockade. No goods of any description were allowed to be imported, and it is safe to say the quarantine effectually prevented the ingress of anything that might bring with it the fever. Still, in the midst of this cordon sanitaire, cases of a fatal fever, which a competent physician pronounced fellow fever, occurred with such quick and fatal results as to remove all doubt of their character. How did it occur, if not imported? Still, some localities were blessed with immunity where most exposed. In the jail of Warren county, situated in the heart of the city of Vicksburg, not a case occurred. We know that occupants of ground floors are first attacked, which leads us to believe that yellow fever poison is heavier than the atmosphere and creeps along the surface of the earth. Did the twenty-five foot walls of the jail present a barrier? True, there was a door, but it was never opened at night, as in a jail there is not much egress or ingress, particularly at night. These are curious facts, perhaps of great value in tracing the habits of yellow fever.

It is at the urgent request of my friends that I have undertaken, in my old age, a task that fifty years of practice warrants. The disease is so simple, in its homœopathic treatment, the symptoms, as in all acute diseases, are so clearly marked, that the homœopath is rarely at a loss for a remedy. By the law of symptomatology, one of the foundation stones of our practice, we have a remedy to cover any phase of the disease. So after reading this little treatise, I think the youngest and most inexperienced of our school will be able to plunge into the horrors of an epidemic with confidence in himself, and faith in the grand law of Hahnemann.

Symptoms General.

To fully cover the ground, we will suppose some cases of yellow fever, of a pure form, and without treatment, following them, in their various stages.

The attack is sudden, although the patient may have complained of weariness and feelings of general depression, bodily and mentally, for several days preceding it. (But, on this point reports are conflicting, as many have the perfect enjoyment of health, up to the very moment of attack.) The greater number of attacks occur between one and six o'clock in the morning, although some come on at odd hours. It is generally preceded by a chill, which in itself has no peculiar symptoms. A violent headache immediately follows, with feeling of extreme lassitude, especially in the limbs and extremities, pains in the back and back of the neck, somtimes excruciating. The patient at this stage vainly tries to find a comfortable position, but tossing about only augments the agony. The chill does not last long, and a fever sets in without an interim. The headache and various pains increase, the temperature of the body rises to a fearful heat, while the pulse does not, necessarily, become accelerated.

Mind.—Confused, delirium, very excitable, fretful and quarrelsome. Sensitive to light or noise, either monotonous or sudden, apprehensive of future; fears death. Reproaching attendants for mere trifles. (Sometimes exactly the opposite).

Sensorium.—Senses acute; giddiness; cloudiness, as from intoxication. Fainting feeling, on rising from recumbent position, with paleness, or sudden flush of face.

Eyes.—Appearance of inflammation; dull heavy pain in the ball, deep seated; the globe tires in rotation, and is very sensitive to light. Eyes protruding; lids hot, dry, burning, sensitive to the air.

Face.—Expression anxious, inquiring, doubting, bright red or purplish hue.

Tongue.—Sometimes clean, generally coated. Tips red, incline to dryness in middle. Swollen. Bad taste, but water tastes good; extreme thirst. Wants to drink often and in quantity or little, gums red and swollen. Tongue pointed.

Desires.—Ice, ice water, lemonade.

Stomach.—Burning pain, uneasiness, nausea and vomiting; pit of stomach is the general location of all these symptoms.

Hypochondria.—Region of spleen very sensisive to touch. Can tolerate no pressure or jar. Liver engorged.

Abdomen.—Violent shooting colic—extending to small of back. Colic as if a spot were seized by a clutch of the hand.

Limbs.—Violent rheumatic aching, not particularly located at any one joint, but universal.

Back and Neck.—Shooting and gnawing pain in spinal column.

Urine.—Albuminous, fetid. (Nearly always a sure prognostic of yellow fever, when its highly charged with albumen.)

Nervous System.—Particularly the point of attack. Through it I believe the system is impregnated with the poison.

I could go on, indefinitely, and cite the different symptome of this erractic disease; but these are the principal ones, occurring in groups or singly. Some cases do not present one-half of those enumerated, while others possess all these and even more. These are only the symptoms of the febrile stage, from which we are to draw our conclusions as to the nature of a suspicious case of fever, occurring under circumstances which may point to the dreaded malady. When the chill is off, and the heat commences, if perspiration has to be brought on by artificial means, there is an unfailing sign of yellow fever, if on being exposed to the air, the perspiration of the patient ceases instanter. A yellow fever patient may be in a nice gentle perspiration, and an arm uncovered will check it instantly, and with the worst results. Toward the end of the second day, the never to be forgotten yellow fever smell will be found in the clothing, often rendering a room, if kept close, overpowering to one coming from fresh air.

If the foregoing symptoms do not abate, the fever rapidly passes into the third stage, that of torpor. The kidneys refuse to perform their functions, the urine is suppressed, the burning pain in the pit of the stomach increases and black vomit soon follows. The first symptom of black vomit is, generally, an expectoration, in which are mucosites, coiled with a tiny streak of blood in the center. This points to the mucous lining of the stomach becoming loosened and the little blood vessels emptying their contents into it. Should the abrasions refuse to heal soon, the blood poured into the stomach is decomposed by the gastric fluids, changing its color and character, and the coffee ground substance is ejected by the mouth and alimentary canal and called black vomit. This stage, although exceedingly dangerous, is not, altogether hopeless, as numerous black vomit sufferers can testify to, who have had this dreadful symptom and survived.

On the other hand, when the violent headache and high fever is not arrested, congestion of the brain ensues, and the patient dies, after intense suffering, petechial, and at last putrid symptoms, with profound collapse, ending life.

Hemorrhage occurs in any and all parts of the body, internal and external, even from the wrists, face, breast, limbs or trunk, but often from the gums, lips, nose, ears and eyes, bladder and bowels.

Hiccough, belching, etc., come on in the last stage, generally, and the hiccough, particularly, is a grave symptom.

I have given the symptoms of this fever in its most common appearance, but the reader must remember that it manifests itself in manifold forms, from those of the most manageable to the most aggravated and unyielding types. Proteus-like, never to be trusted, it requires the most careful medical attention and the strictest, most prudent and most intelligent nursing—the least mistake, either on the part of physician, nurse or patient, precipitating a seemingly safe convalescent into his grave.

Conscientious allopathic physicians acknowledge that they have no remedy, advising brethren to try remedies and treatments which they, in despair, resort to by way of experiment. I admire the candor of one eminent allopath who openly acknowledges this want of knowledge in regard to remedies for the treatment of this fever. Every physician of the allopathic school treats his patients according to his theory (a *law* to guide is not to be found in their practice), hence we find the noticeable diversity of opinion among them in treatment. They all agree on one point, however, and that is to attack the bowels with purgatives or laxatives. No homœopathic practitioner does this. Certainly, in our experience, nothing is more detrimental to the chances of recovery of the patient than to aggravate the irritation of the sensitive and diseased stomach and bowels still more, when such remedies prove themselves entirely inefficient in grave cases, often precipitating a mild case into a serious or dangerous state. If the attack comes on after a hearty meal, nine cases in ten empty an overburdened stomach by an effort of nature, the good old dame causing the patient to relieve himself by a painless, natural vomit. If such does not occur, it is not only unneccessary to produce either it or evacuation by artificial means, but, on the contrary, it destroys the comfort of the patient and aggravates the irritation and inflammation of the mucous membranes, rendering them more liable to destruction or removal. A yellow fever patient, during his whole illness, will not eat a teacupful of solid food, reduced from tea, toast, rice-water, beef tea, chicken broth, etc., and when nature refuses to rebel against the insignificant amount, man should not meddle. The fact of numerous living patients lying in bed, without action on the bowels, for various periods, ranging from ten to *twenty-two* days. ought, I think convince a public that the danger in yellow fever does not lie in the inaction of the bowels. When the patient had so far regained his strength as to be able to eat solid food, if nature required assistance, a few doses of nox vomica, in minute doses, always had the desired effect, in my experience, and I certainly had a sufficient number of cases to thoroughly test this question. I can imagine nothing more sensitive than the system of a person attacked with yellow fever. Is it reason to handle it roughly, and pour down nauseous drugs? In the proportion that it is sensitive, it is also susceptible; and is it not reason to assist nature in healing by the most gentle means, and in the dose of medicine is it not sound logic to avoid irritation, using only minimum doses? Can we imagine the infinitesimal quantity of poison that *produces* the disease? It is not appreciable by weight, taste, smell, or to the sight under the most powerful microscope. If this minute cause will prostrate the vigorous man, and thoroughly disease his whole system, is it unreasonable to apply the remedy in like proportion? The human system is a delicate pair of scales when in perfect health, on a perfect poise. Disease is not a pound weight thrown upon one arm, nor is a pound weight of physic required to restore the balance. Little by little we drop the delicate weights on the scale, until the equilibrium is restored. The human system is a delicate piece of mechanism, comparable to the most delicate watch. If a wheel is out of place, we do not grasp it with a pair of blacksmith's tongs; we use an instrument as delicate as the part affected. The diseased system is a target with the point we aim at of a very small size. We do not load a blunderbuss with slugs and destroy the whole thing; we aim at the mark with an accurate rifle, with a good marksman behind the gun. Does the carpenter tack on the shingle with a spike and sledge-hammer? So in every day life we find thousands of instances illustrating the law of nature in not regarding brute force as power. This is the theory of small doses, but do not imagine that small doses constitute the homœopathic law. Small doses are simply the medium of the proof of the grand law, *similia similibus curantum.* We respect nature; we follow her teachings against the current of all creeds and doctrines. Hygiene is our close study, and in no disease do we have such happy illustrations as in yellow fever. Fresh air, water and food are the three great supporters of life; still, all can be abused. Air is essential to all life, and the yellow fever patient must have it in abundance, but to let him be in a draft will kill him. Water must be given, but a false desire must be restricted somewhat. The patient never wants it warm, and it must be given to him cold, but he must not drink it at the temperature of melted ice. Nourishment he must have, but it must be in quality and quantity that will not tax or overburden a weak stomach. Another great error is the habit of opiates, among the old school practitioners. If brain symptoms produce insomnia (sleeplessness) no homœopath would produce unnatural sleep. Does not everyone know that patients, under this treatment, very rarely recover? Never, for an instant, think of using any kind of opiate.

But, no matter how plausible a theory may be, we must bring to our support *facts*, stubborn and insurmountable. As to the general rate of mortality, in the two schools, there is a noticeable difference. We will take as authority the statistics of a well known life insurance company (The N. Y. Hom.) This company takes risks among all classes, but to persons who use the practice of Homœopathy, they give lower rates, and on this ground. This company had issued policies as follows:

To Homœopaths	4470
To non-Homœopaths	1437

The deaths up to January, 1874, were as follows:

Homœopaths	32 or 7-10 per cent.
Allopaths	67 or 2¼ per cent.

Here we have a mortality, on the Allopathic side, over three times as great as that on the Homœopathic. Still, no fairer test can be made, for every one knows how carefully the insurance companies calculate their chances. But this company found that its Allopathic patrons died in the ratio of three to one of the Homœopaths, so it changes its rates to cover its losses. Can this be disputed?

Now in regard to the relative mortality in yellow fever, we are at a loss for a comparison, as they do not publish or even make out a report of cases. But as for Vicksburg, we have sufficient figures to make a comparison. We have a published list of 988 deaths. In the death list 46 of my patients are numbered; but it should show 54. Dr. Harper has a death list of 20. The volunteers, who treated cases Homœopathically, under direction of myself and other ones of our school, did not have to record a death. This can best be explained, when I say, that such persons, not wishing to take the risk of a patient's life in their hands, would not, of course treat a case which was in a desperate condition, but such cases, without exception, almost, were turned over to either Dr. Harper or myself. My two sons, both medical students, when the epidemic was at its height, treated a great many cases, for, without their help, it would have been impossible for me to have treated the number. Their record is embodied with mine, as they were acting, always, on my advice.

Now, the number of cases of fever treated Homœopathically in Vicksburg was at least 1600, in round numbers. Of this amount we have records as follows, which can be proven up if disputed.

CASES TREATED BY HOMŒOPATHIC MEANS.

Dr. A. O. H. Hardenstein and Sons	781
Mr. Tilford Pegram	22
Mr. John Haszinger (in Vicksburg)	17
Mrs. H. R. Pease	60
Dr. T. J. Harper	350
Total	1,230

DEATHS IN THE SAME.

Dr. A. O. H. Hardenstein and Sons	54
Dr. T. J. Harper	20
Total	74

This is a mortality, as far as records show, of exactly 6 and 1-60 per cent. But mind well; while we have accurate records of deaths, we have lost run of 200 cases of fever treated by the law of Hahnnemann, but we will take the *recorded* result of 6 per cent.

This leaves 5270 cases and 914 deaths to be accounted for. Now what is a liberal estimate of cases without a physician? Not exceeding 300, and most of them from choice. Now how many of this number died? Only 75 at the outside, for the law of ordinary epidemic only places it at 20 per cent. Now is this estimated liberal? I think so.

This then will leave 4970 cases for the Allopaths and 839 deaths, or 17 per cent. I have been told that the estimate of my son's is too high for Vicksburg, when he places the number of cases at 6500. If it is less, it will make the death rate of Allopathy more. There is, however, a word of justice to be said to the other school. While the individual record of death loss of all the Homœopaths, in the great field is very near the same, the records of the different Allopaths vary. The people of Vicksburg find that the death rate of some of the Allopaths is light, while that of others is enormous. Thus, when taken as an average, it places an unjust burden on the shoulders of some, while lessening the mortality of those who did not much more than *save* the percentage of loss of others. I do not know of any other doctors in the city keeping an accurate record, but I had blanks printed, and on them noted the name, date, age, residence, occupation and final disposition of each case. This work was under the particular care of my son Ernest Hardenstein, but during his attack, (from Sept. 8 to 22) in the hight of the epidemic, and in the busiest time for me, the record was abandoned, for the cases of fever in my own family only received professional visits from me, and no time was left for notes of age, etc. There is one fact, in regard to the Allopathic treatment, in Vicksburg, which an observing public soon found out. The physician who did not burn his patient with piles of bed clothes and used but little medicine was more successful than his brother who stuffed down the bolus-like pills and denied the sufferer the comforts nature demanded.

The Treatment.

To insure the lowest rate of mortality, and, consequently, the highest degree of success, in the treatment of yellow fever, we require :

First.—A proper regard for hygiene and as cleanly a location as possible. The room of a yellow fever patient must be well ventilated, and if not naturally so, it must, at once be so arranged. The bed must be made comfortable, for the reception of the patient. The mattress must be soft and springy, free from lumps or inequalities, yet I do not, by any means, wish a feather bed. In the first place, it would be too warm, and then again, there is no adaptability for a change of position. Place the bed, diagonally approachable from both sides, in a corner of the room, where there is no window or door. If this is not possible, close such doors or windows and keep them so. If there are cracks in them, from which a draft might fall upon the patient, stop them up. From the other doors and windows, let there be a continuous current of air, so directing it that none will fall directly upon the patient. In the inception of the attack, change the linen of the patient, and the bed clothing, starting with everything clean, for no change can be made until after he is fully convalescent. This should be done at the start; but if neglected for two hours, it is best not to do so. Have good, cold water at hand; if cistern water feels cold enough to the patient, it is all that is necessary; if not, let it be cooled by ice, but not too icy cold. Half a glass of water every twenty-five minutes is not too often for the patient to have it. A foot bath is desirable in a great many cases, and creates a comfortable feeling in the patient. But if he strenuously object to it, and you think it will make him uncomfortable, do not use it. But it is a universal primary hygienic remedy, and the patient rarely, if ever, will object to it, so then administer it of hot water alone. *Give no purgative or emetic*, but to induce perspiration let the patient drink a cup of hot tea. Wait ten minutes, and if the perspiration does not start, let him or her drink a teacupful of ice cold water. Cover up warmly, yet lightly to the neck, keep the hands and arms under cover, and a moisture will soon be apparent. Keep up this moisture, but do not sweat the patient. Let comfort ever be the ruling thought.

Use black or orange leaf tea, prepared to suit the taste of the patient. There is a very important auxiliary to the supply of fresh air in the sick room. The fetid odors exhaled from the body can be neutralized, not by a disinfectant, offending the delicate nostrils of the patient, but a disinfectant, nevertheless. Common charcoal, in shallow vessels, placed in different parts of the room, under the bed, on chairs and tables, will absorb a great deal, if not all of the poison that the diseased system throws off. It costs ten or fifteen cents a bushel, and is available in every community. Change it often, and the chances of infection for the exposed attendants is greatly lessened. On this point we have ample testimony from the series of letters published in another place. Do not stint the quantity; a bushel or two, in shallow boxes in a room, will not be in the way, and all that is required is to take it out of the room every morning and stir it up to change the position of the lumps, which should not be pulverized, only broken in lumps as large as a pigeon egg, thereby exposing the greatest possible amount of surface. Would that charcoal had been favored with as extensive a trial as carbolic acid, a substance whose only effect was to destroy—not yellow fever miasma—comfort, and perhaps life. A whole city can be disinfected with it at a cost of ten cents per capita. There is, however, another requisite for the successful treatment, and as hygiene is first, it stands

Second.—Conscientious, intelligent and educated nursing. We need, in these epidemics, not only experienced physicians, but, above all, good, reliable nurses. Congress should endow institutions for the education of such, and we Homœopaths should be particularly careful that a fair share of them should be taught in Homœopathic principles. If Congress cannot or will not act in this matter, each State should have an institution of this kind. They should be taught the principles of nursing in all diseases, and especially in acute epidemic diseases. The schools should be connected with asylums, hospitals and infirmaries, where the students can receive practical instruction and illustrations. After taking a full course, a diploma should be issued to them. Men and women of this kind are needed—in fact, they are indispensable. To such, in epidemics, the best of wages would be paid, and it would really be cheaper labor to the public, for we could then dispense with the rabble of so-called nurses, who, too often, are the dregs of humanity and unprincipled adventurers and rogues. If we had such nurses, how much time would be saved. They would know, without direction, how to keep the patient covered, how to administer the remedies, and prepare the nourishment, thus saving the physician hours of valuable time every day. On the nurse depends mainly the chances of recovery. How different it would be to see a skilled nurse gliding about the room, instead of a shuffling boor, who, even if well-meaning, cannot instil in the mind of the patient cheerfulness or confidence. There is no more difficult task on earth than waiting on a yellow fever case. A single fret or irritable toss may weigh down the balance of life. Cheerfulness in the sick room is a remedy that must be constantly kept up. The perceptions of patients are very keen, and a look is readily interpreted by them. If you betray your doubt of his recovery, or a look of yours implies you know he is in a dangerous state, it may frighten him to a fatal termination. If his condition warrants conversation, the nurse has it in his power to direct the patient's thoughts into pleasant channels. To practice deception is necessary sometimes, but if discovered by the patient it were better to have told the truth. How many instances were there, in 1878, when form after form was hurried away, and other sufferers kept in profound ignorance. In stricken families we would see the mother inquire after the daughter she missed from the bedside; and to tell her her child was well, when she was even then sleeping the long sleep, was a falsehood which was not recorded on high, and was the means, perhaps, of saving a life to be darkened, in convalesence, by the terrible reality. What agony did the mother suffer in deceiving one child in one room—in the other a little form in its shroud. In a great epidemic such scenes are so common that the horror is not noticed.

First Stage—Erethic—Chill.

The chill may come on quite naturally, but at this time, although it may be a simple ague, if the symptoms of camphor or veratrum present themselves, they are the remedies. It is charged by the Allopathic school that Homœopathy does not treat diseases, that it is a practice of symptoms. Now the answer is this: By those symptoms we arrive at a true diagnosis, but it is sometimes very difficult to diagnose yellow fever ab initio. Must we wait until the patient is fairly under way before we give a dose of medicine? We treat the prevailing symptoms, letting further developments decide the nature of an attack. If it proves to be only a case of simple chill and fever, our treatment would be the same, if the symptons were those of camphor and veratrum. But, when yellow fever is epidemic, remittent fevers verge into yellow fever, and there is rarely ever a mistake made. Now for the remedy when the patient is first attacked: Camphor and veratrum present almost identical symptoms, but while camphor has, particularly, *coldness of limbs*, veratrum is indicated when the patient is *cold all over*. Camphor has the trembling *internally;* veratrum, trembling and jerking of *external* parts.

First Stage—Erethic—Fever.

When the fever comes on, which is immediately, generally, we find belladonna, bryonia and aconite to be the remedies indicated. The first two to compare are aconite and belladonna, but there are a great many diverging lines from the parallel of symptoms. In the pulse is a slight difference. In aconite, the pulse is a full bounding pulse, not always so quick as belladonna, which is an accelerated pulse, but also full, hard and tense, large or full and slow, and at times small and soft. Any practitioner of our school can instantly detect the pure aconite pulse, but the lines are so close, it is hard to explain the difference. The belladonna pulse is, however, clearly indicated in the throbbing of the carotid and temporal arteries, which is visible. The great difference is in the color of the face. Both have flushed faces, but while that of belladonna is a *bright scarlet*, aconite is indicated, clearly, when the face is *dark red* or *purplish red*. Besides, in belladonna the body is warm, while the feet are cold, which is not the case in aconite. Aconite was only useful a short time, under my observation. I would use it when indicated only five or six hours, following it with belladonna, as the symptoms generally changed to that remedy. In the start I gave it or belladonna every half hour or hour in dilution with water (a teaspoonful), gradually widening the interim of doses to two hours. If the temperature was not reduced, I did not drop the remedy, but continued it patiently. Sometimes the action of these remedies was marvelous, seeming to arrest the unfavorable symptoms and tide the patient safely over the different stages to convalescence. Belladonna, again, can be compared to bryonia. Belladonna has the headache in the *front* of the head. Bryonia has the headache in the *back* of the head, extending to the neck and shoulders, particularly on the right side. Belladonna has oppressive pain in the neck when leaning back, with backache, while bryonia, in presenting almost the same symptoms, is particularly indicated by pleuritic and rheumatic pains in the chest, with or without cough. Belladonna is also suitable to the first symptoms of the meningital form. Bryonia follows well after belladonna when it does not check the pains in the back, or the pains are decidedly rheumatic. Now, although we are giving belladonna, bryonia or aconite, we must watch for smyptoms denoting other remedies. Nausea simple may come on, when it will be necessary to drop the remedy and give a few doses of ipecac, returning to the remedy in hand when the trouble is past. If the nausea is accompanied by an uneasiness or burning pain in the pit of the stomach, arsenicum album is to be given every half hour or hour, and if improving, every two hours. If the nausea still continues, and is not checked, either by ipecac or arsenicum, use cadmium sulph. The effect of this remedy is worthy of especial notice. It is a remedy generally unused in our practice (never before in yellow fever), partly because there has been no extensive proving, and again, because its symptoms so nearly coincide with ipecac and arsenicum. These two well-known and proven remedies, in ordinary diseases, very rarely fail in their action but, in yellow fever, my experience of 1878 has taught me to rely more upon cadmium. Where I have used it, I do not think I have had to record a single failure in its action, when the peculiar symptoms have manifested themselves. I do not know of any proving in English, mine is in the German of Hirschel, but it is a remedy that should now be fully proven, as it has shown itself to be prompt in action in 1878, although I do not remmeber when I have used it before. But, in the experience of all physicians, long disused remedies are sometimes, resurrected and used with the most happy results. During this stage (the fever), lasting from 24 to 36, 48 hours (and even as long as 96, as in the case of my son) the physician must be on the *qui vive* for unfavorable or grave symptoms. Further on is a list of phases of the disease—hardly called symptoms—with the time opposite when they are most *likely* to occur; and a glance at them is of great help to an inexperienced physician, perhaps causing him to avoid a surprise.

Local Measures.

We do not use leeches, practice blood-letting, blistering or put the patient in an ice-box. All this, to say the least, is needless cruelty. Certainly the patient needs all the vitality he has in his system, and cupping may give a moment's relief, but it is prostrating. Nor do we buoy the patient up with quantities of liquor, for a patient on stimulants has no real strength. But we use outside measures, especially in the grave symptoms of black vomit, or after the vomit has occurred.

During nausea, put ice cold cloths on the stomach clear to the throat. If black vomit is imminent, make two mush poultices quickly, cool them, spread on a cloth and sprinkle powdered willow charcoal thickly. Place a muslin cloth over this and put on a block of ice. Place the charcoal side next to the stomach, and change, when warm, to the other one, which is to be kept on ice—always the charcoal side next to the stomach.

I do not like the practice of putting ice cloths on the head of the patient during a burning fever. It has a tendency to check perspiration, which is so essential.

When the pulse sinks, and the patient is very weak, give a teaspoonful of very weak brandy toddy every half hour. Two teaspoonsful of brandy in half a glass of water, is strong enough to produce exhilaration. In the progress of the disease, it is also requisite in extreme debility and exhaustion. The idea is not to use it, except in cases of necessity, for if the patient is constantly under the influence, in a pinch, its action fails. When entirely convalescent, it is good to help build up the body and strength, when taken in moderation.

Second Stage—Synochal—Fever.

This stage is really a continuance or full development of the disease. In it are manifested or developed most of the grave phases of the attack.

The physician cannot be too careful and circumspect, in watching all symptoms. Do not be deceived by an apparent improvement. The patient who is doing well in the morning may perhaps be dead in a few hours, too often by an act of imprudence of the nurse or the sufferer himself. With what feelings of pain does the physician behold the work of a direct draft of air, or, in convalescence, a too hearty meal, on a stomach that has to be gradually accustomed to food. I have seen the tippler, fully recovered from his attack, after three or four days exercise in open air, die in two hours from the effect of a glass of whisky, which a craving appetite could not resist. But nourishment is life to the yellow fever patient, and *from the first* I nourish the case. A cup of tea, while the fever is on, toast in the smallest quantity, dry and brown through, should be given to the patient if relished, three times a day. Tea according to taste. Consult, as far possible, persons' tastes, and give nothing that is not relished, or which disagrees with them. Gently humor them, if reasonable; always cheer them up. When the fever has left, make chicken broth, (beef tea is better if they like it) and give them, in addition to their regular allowance of toast and tea, a teaspoonful or two every two and a half or three hours, gradually increasing the amount. As they surely convalesce, make foods of corn starch, rice, tapioca, etc. Let them chew a piece of steak or chicken and swallow only the juice. According to the attack, dress them in ten or fifteen days, never under ten, and let them stay in a room a day or two. *Not too much exercise.*

In no case let them eat ordinary food for five or six days after getting up. Use your discretion, and do not be guided by their desires. Do not starve them; only accustom a very weak stomach to its usual functions in digesting ordinary food.

Neaves' infant food is very valuable, being very nutritious and palatable. It can be ordered by any Homœopathic pharmacist. It was fully tried in English hospitals, and comes across the water highly recommended. For a yellow fever patient I have found its use invaluable.

Third Stage—Torpid—Collapse.

When the fever has run its course, there is a marked change in the patient's condition. If the case has dragged its length along without any unfavorable symptoms, we should not be too sanguine, for the patient is not yet out of danger. Even if he has not been attacked with nausea, cerebral symptoms, etc., a decided reaction takes place. The pulse, heretofore at or above the standard, rapidly sinks and we find a treatment necessary for this stage. The old school, rely now on stimulants, and to use their own expression, try to "pull him through" by heroic doses of brandy or champagne. While I do not condemn their use, I will simply state that in 1878 I did not order two dozen bottles of both together, finding our remedies gave all the strength required, in assisting nature. In convalescence, a little stimulant is necessary; but by this time they have long passed from the hands of the physician and require nothing but prudent diet and exercise for a few days to enable them to regain their natural vigor. Then liquor is good, and I would avoid its use until that time. But what does the Homœopath do, when after perhaps 48 hours of fever the pulse sinks and the patient is on the sure road to collapse? There comes our grand remedy carbo vegetabilis, a potentization of common charcoal. I have seen the pulse go down to the lowest ebb and under the effects of the medicine creep up stronger and stronger until the standard was attained. The fever may pass off without any symptom of danger presenting itself, and then the trouble may begin. Black vomit symptoms, pervigilium, singultus, nausea, emesia, emesis, insomnia, hemorrhage, anuria and dysuria even may present themselves, and suddenly our seemingly safe patient is on the brink of eternity. The least imprudence of nurse or patient may consign the sufferer to the grave. At this time the patient is generally free from all pain, and this fact works against him, causing him to go beyond his strength. He may want too much to eat, or perhaps will stubbornly persist in rising from his bed. How many lives have been lost this way, and how many could have been saved by the firmness of a well trained and fully educated nurse. It is hard for a physician to dismiss a patient from treatment, and find that two days after he has killed himself by yielding to the enormous appetite of a convalescent. Yet this has been my experience. It is hard to think of a patient on his eighth day changing his clothing and bedding, walking around a room and then dying in twelve hours from a relapse brought on by his own imprudence, after receiving the strictest cautions from me, yet I have known this in 1878. These are cases which have occurred, when during the fever they had passed with safety over the various stages to convalescence. In this, the third stage, when the physician has been battling with a stubborn case and fighting the battle of life for the patient, after all he may may be saved, even after reaching collapse. Do not despair, he may yet survive, but if he die, remember he is one only of the number to swell our small death roll, which every locality and every epidemic shows to be larger on the side of the old school. To those who have never combated the dreaded disease, the following table of symptoms may be found useful. Others besides physicians will read this book, so I have expressed in plain language all the information it is intended to convey:

TABLE OF SYMPTOMS.

Perviligium (restlessness, sleeplessness).—An unfavorable symptom, occurring, generally, toward the end of the synochal stage, and in the torpid. Though it may not occur in the early part of the attack, the patient may roll and pitch about even while asleep; but this is little better than insomnia, as the apparent slumber is too often an unnatural torpor of the fever. Aconite and belladonna (if occurring while the patient is under their influence) covers this symptom, if in an ordinary form; but if very marked it should be looked after with the following remedies: If the mind is very much excited, coffea cruda is the remedy. If with delirium, opium is beneficial. Tossing about, arsenicum album. *Constant* tossing about, aconite. Excessive nervous irritation, moschus. During convalescence, calcara carbonic and sepia. If caused by pain in the bones, daphne indica.

SINGULTUS (hiccough.)—A grave symptom in yellow fever, occurring generally toward the end of the synochal and in the torpid stage. It must be promptly treated. Arsenicum album stands at the head, as so many other symptoms at this time point to it. Belladonna also covers it.

ERUCTATION (belching).—A minor symptom, indicative of gastric troubles. It is covered by almost all remedies used in the stage in which it occurs. But if a particularly acid fluid is belched up, scratching or burning the throat, give lobelia inflata.

NAUSEA.—Simple nausea commences, generally, in the first or erethic stage. In the end of the synochal and in the torpid it assumes a graver form, being accompanied by burning pains. Simple nausea, if continued, rapidly throws the patient into a dangerous state, and should be very promptly treated with intermediate remedies. Ipecac generally checks the simple form. If it does not, look at arsenicum, cadmium sulph. and carbo vegetabilis. Carbo vegetabilis is indicated by frequent empty eructations, pinching in abdomen. sour, rancid, pyrosis. If pyrosis is very severe, and carbo vegetabilis does not help, use lobelia inflata.

EMESIA (ineffectual desire to vomit).—See nausea.

EMESIS (vomiting.)—See nausea.

INSOMNIA (sleeplessness).—See pervigilium, which covers all this.

MENINGITAL SYMPTOMS.—These dangerous symptoms occur, generally, in the synochal and torpid stages, and sometimes in the erethic. Belladonna stands at the head. Bryonia when with constant sopor and delirium, starting from sleep, particularly suited after belladonna and argentum nitric. Argentum nitric: violent headache with vertigo, sharp pains from back of head to the front, head thrown back. If there are petechial spots or hemorrhages, at an early stage, stinging pains and pulsation from back of head to front, small pupils, or symptoms of pneumonia, give phosphorus. Argentum runs nearly parallel with phosphorus, but has not the petechial spots. Tartar emetic when with drowsiness and stupid headache, twitchings and cold sweat with pain. Veratrum album is indicated by headache with delirium or unconsciousness, vomiting, with cold and pale face, accompanied by stiffness of neck, rolling the head from side to side in the pillows, short screams. Raising the head causes convulsions and vomiting, collapse with intense congestion.

ISCHURIA, ANURIA (suppression of urine).—This grave symptom occurs from the synochal to the torpid stage. Belladonna, which is generally the remedy in hand when the symptom manifests itself, usually covers it. The symptoms of strammonium are that the kidneys secrete little or no urine, and I found its use in one case to be desirable. Opium, when drowsy and stupid. There is so little trouble in the Homœopathic practice, from this symptom, that I seldom found use for outside remedies, as most of the medicine given at the time of suppression covers the symptom. Plumbum has difficult emission of urine, mixed with blood, paralysis of bladder and suppression.

DYSURIA (retention of urine).—This is not so grave as suppression, and is generally relieved by parsley tea, watermelon seed tea, a drop of turpentine on a lump of sugar—old common sense remedies not allied to any practice, and which nurses administered often without my orders. But the effect was always good, and I never forbid them. Warm cloths on the abdomen, over the region of the bladder are very beneficial. Cantharis and nux vomica are the remedies employed when necessary. Opium is particularly indicated when lying in a sopor and snoring.

HEMORRHAGE.—This grave symptom manifests itself during the synochal, the torpid or collapse stages. If the bleeding is much from the mouth or gums, and the blood coagulates like healthy blood, hamamelis is the primary remedy. If the blood does not coagulate, look then to lachesis and crotalus.

COMPARATIVE MATERIA MEDICA.

A Table of Analagous Symptoms, With Diverging Character Noted.

Camphora.	***Veratrum Album.***
Trembling of *internal* parts. Coldness of *limbs*.	Trembling and jerking of *external* parts. Coldness *all over body*.

Aconitum Napellus.	***Belladonna.***
Fear of death; doubt, despair. Low spirited.	Weary of life.
Face *dark* or *deep* red.	Face *bright* red or pale and cold.
Pulse full, strong, bounding.	Pulse full, hard tense; accelerated, or full, large and slow, *at times small and soft.*
Restless, tossing about in great agony.	Restless, etc.
(Rarely ever delirious.)	*Delirium;* afraid of imaginary things. Burning heat in face, sometimes without redness of cheeks; or burning heat, *body warm, feet cold.*
(Rarely, if ever.)	Throbbing in carotid and temporal arteries.
(Eyes not so sensitive, and other symptoms not so marked.)	Dislike to light, bright things. Heat and burning in eyes and eyeballs. Eyes red and prominent. Vomiting of blood, ringing in ears. Feeling of fullness and warmth in stomach.
[I have found aconite useful only a short time—five or six hours—after it belladonna follows well.]	[Belladonna covers the first symptoms, generally from 24 to 48 hours. Particularly suited to people of full habits (plethoric) or lymphatic; jovial and talkative in health, but angry and violent in sickness.]

Belladonna.	***Bryonia Alba.***
Headache more in *front* of head.	Headache more in *back* of head, extending into neck and shoulders. Pain in muscles of neck, more on the *right* side.
Oppressive pain in neck when leaning back. Backache.	Particularly indicathed by pleuritic rheumatic pains in chest, with or without cough. Back and every spot of body painful.

[Suitable to first symptoms of spinal meningitis.]

Ipecacuanha.

Indicated when gastric symptoms commence with nausea, vomiting and aversion to food. Retching after drinking water. Useful as an intercurrent remedy to subdue nausea; therefore it may be given while the patient is on *any* remedy if nausea supervenes. (To be followed by cadmium sulph. if relief is not soon found.)

Ipecacuanha.

Symptoms the same as in comparison with arsenicum album, but, *sometimes*, black, pitch-like masses are vomited, or bitter, sour, acrid smelling water.

Vertigo only *on motion*

Arsenicum Album.

Nausea with faintness; retching, hiccough, vomiting food. Gastric juices, after eating and drinking, bitter, green, yellow, liquid brown, turbid, *streaked* with blood. Bloody, black. Heat and burning in stomach. Stomach heavy, tender, painful to pressure; sweet milk relieves. Pain in liver and spleen. Spleen enlarged. Pains in abdomen; warmth relieves pains; involuntary stool and urine. Diarrhœa slimy, green with mucous, tenesmus. Vomiting black, acrid, putrid blood and water. Urine scanty, difficult, burning. Retention of urine; paralysis of bladder, discharge of pus and blood, or blood.

[Follows well after belladonna when it does not check the pains in neck and back part of head, or rheumatic pains in chest and body occur.]

Arsenicum Album.

Indicated in the graver form of nausea, accompanied by an oppressive feeling in the pit of the stomach, burning pain in stomach or bowels. Nausea, with vomiting of black or brown and black masses (not necessarily black vomit), with great thirst, but *drinking little*—sometimes no thirst. Pain in liver, more in spleen, Diarrhœa also, with tenesmus; stool green, fetid, bloody. *Short breath, suffocation, neck stiff.* Important in black vomit.

Cadmium Sulphuricum.

Taste like pitch in mouth. Salty, rancid belching. Nausea in mouth, chest and abdomen, often with pain and cold sweat in face; pain in abdomen, vomiting of sour, yellow and black matter; burning and cutting, pains in stomach. Acts well during pregnancy, and with drunkards. Useful after cramps in the stomach Pain, stiches in the *left* hypochondria. Pain and *pulsation* in sides of abdomen. Cutting pain in bowels and region of the kidneys. Palpitation. Useful if any of the grave symptoms appear after being exposed to a draft of air or when perspiration is checked. Of the utmost importance to arrest nausea when other remedies indicated fail, and to check black vomit.

Vertigo; room and bed seems to spin around.

Carbo Vegetabilis.

Plainest food disagrees; nausea, vomiting. Dread of eating on account of after pains. Burning in epigastrum and abdomen. Excruciating heart-burn. Vomiting of blood, burning in stomach, spreading to small of back and shoulders. Body ice cold. Fainting. Stitches in liver, pain in spleen. Stool burning, light colored, fetid, tenesmus, putrid. Pressure on bladder and anus. Collapse, cold breath, blood stagnates in capillaries, blue face, cold face and limbs, cold sweat, *impending paralysis of heart.*

Pulse *accelerated*, quick and weak, small, irregular, sometimes imperceptible, thread-like.
Petechial spots on body.

[Cadmium relieves the nausea if arsenicum or ipecac fail, also, particularly black vomit.]

Crotalus Horridus.

Delirium with *open* eyes. Terrible headache, with red, puffed face. Pain in all limbs and body, turning about, restless. Pains in chest. Pulse very small, with fainting spells. Sometimes cannot move or speak, with quick, feverish pulse. *Bloody sweat.* Bleeding of gums. Stomach weak; cannot retain anything but brandy or gelatine. Hemorrhage from anus and other orifices. Painful retention of urine. Pains in bones, *purple spots*, *yellow* color of skin.

Acts more on *right* side.
Suitable for *fat*, or *plethoric* persons.

Pulse *thread-like*, intermittent or totally imperceptible.

[Suitable to follow belladonna, when the pulse sinks to a state of weakness and exhaustion supervenes. Also after arsenicum.]

Lachesis.

Delirium at night. Drowsy. Red face. Slow, difficult speech. Dropped jaw. Loquacious. Condition worse after sleep; better after nourishment. Comatose. Tongue heavy, cannot open mouth wide; tongue trembles, dry and red, cracked at tips; red tips, brown centre. Nausea after drinking. Weakness. Dispnœa. Palpitation. Cold sweat. Cannot bear pressure on throat or chest. Anxiety about heart, cannot lie on left side. Fainting. Stiff neck. Difficult speech. Blood in hemorrhage dark. *Does not coagulate.* Cellulitis (inflammation of cellular tissue of intestines) particularly of rectum or anus, with burning and blue color of skin.

Acts more on *left* side.
Suitable for *lean* or *slender* persons.

OTHER REMEDIES.

Argentum nitric.—Particularly employed in meningital symptoms. For its peculiar symptoms, see "Meningital Symptoms."

Arsenicum hydrog.—Dark brown skin all over; total sleeplessness. Pulse frequent. Excited, wants to talk constantly. Face greatly changed. Nausea; uninterrupted belching up, spasmodically, of a large quantity of tasteless air, with great pain in abdomen. Very troublesome and annoying singultus (hiccough). Vomiting of mucous, yellow, green and bitter; and constant retching and vomiting after taking the least thing to eat or drink. Pressure in the kidneys, extending to shoulder blades, with pain in region of the kidneys during desire to urinate. Urine dark, blackish red with pure blood. Abdomen burning, outside; cold feet.

Lobelia inflata.—Very seldom indicated, but of great importance when it comes into use. For its symptoms see nausea.

Cantharis.—An important remedy, rather in the retention of urine, not so much in suppression. See dysuria.

Hamamelis virg.—In hemorrhage, particularly the gums and mouth. If the blood does not coagulate, crotalus is an important remedy.

Nux vomica.—Particularly useful, in convalescence to relieve constipation. Useful also, in dysuria (retention of urine) which see. To be given if purgatives or sedatives have been previously used.

Calcarea carb.—During convalescence, this remedy is particularly useful, if headache occur, the pain being seated in the crown of the head, or from the back to the crown, or one sided headache with eructation (belching) or with weak memory, waking early in the morning, cannot sleep after three o'clock in the morning. Often suitable after belladonna.

Chamomilla.—An intercurrent remedy for colic or colic pains. If not relieved give colocynth, if the pain is sharp and cutting, in paroxysms.

Colocynth.—See Chamomilla, with which it runs nearly parallel. Both are useful, in yellow fever, for symptoms indicated.

China.—During convalescene, particularly after severe cases, and where a great deal of animal fluid has been lost. After hemorrhages, vomiting and diarrhœa. *Night sweats;* if fruit disagrees.

Coffea cruda.—Full of *clear* ideas; cannot go to sleep on account of them. Quick actions following intentions. Acute hearing, smell or taste. Talkative (lachesis); colic from overloading stomach; sleeplessness from over-excitement.

Pulsatilla.—Not much used in yellow fever. During fever, absence of thirst with moisture or sometimes dry tongue; or thirst with little drinking. Suitable particularly for women and children, especially light haired.

Hepar sulph. calc.—To be used if mercury, in any form, has been given. To counteract salivation, if the patient has been so abused. During convalescence, if boils or abscesses develop themselves (which is frequently the case). After belladonna for boils. Other eruptions, *sensitive to touch.* Ulcers with bloody pus, foul smell and pulsation in them. Dyspeptic symptoms.

Rhus toxicod.—In meningitis *after* bryonia. Neck stiff; spinal membranes inflamed. Pains in shoulders and back, with stiffness, as from a sprain. Pain in small of back, *better when lying upon something hard.* Sleeplessness from pain, must turn often to get ease. Rheumatic pains, numbness and tingling in limbs. In a typhoid sequel to yellow fever: Mild delirium, talks slowly; stupefaction. Putrid taste in mouth in the morning and after eating. Food, bread, etc., taste bitter. Tongue dry *red tip,* covered with brown mucous; imprint of teeth. Watery diarrhœa, bloody mucous, involuntary stools.

Opium.—An important remedy in pervigilium, acting parallel with coffea cruda to a great extent. See pervigilium.

Sepia.—A minor remedy in perviligium, which see.

Daphne indica.—A remedy in insomnia when caused by pain in the bones. See pervigilium.

Phosphorus.—Hemorrhagic form with petechial spots or meningitis. Particularly indicated by pneumonia pains, after bryonia or with it.

Tartar emetic.—In meningitis, when drowsy with stupid headache. See meningitis.

Plumbum metall.—Used in suppression of urine. See ischuria.

I have written this treatise plainly, but I have named in it a great many remedies which are not used once in a hundred cases. To those who are not physicians and who would perhaps be perplexed in a choice of remedy, I will state that the following remedies will treat almost any case of yellow fever, occurring in any epidemic, with results far superior to any other treatment:

Aconite	3	Cadmium sulph	30
Arsenicum album	6	Camphor	3
Belladonna	3	Coffea cruda	30
Belladonna	30	Crotalus horridus	30
Bryonia alba	3	Lachesis	6
Cantharis	30	Hamamelis virg	3
Chamomilla	3	Ipecac	3
China	3	Nux vomica	3
Colocynth	3	Veratrum album	3

For their use, the investigator has only to look at the ready reference tables I have prepared, and I trust, he will find all directions explicit. During the chill, I give five or six pellets of camphor or veratrum (which ever one is indicated) every 10, 15 or 20 minutes. During the fever I gave the remedy indicated every hour for four hours, then every two hours. Intermediate remedies for nausea and other unfavorable symptoms have to be given frequently, say 15, 20 or 30 minutes; as the patient gets better, always widen the time of doses. When he is well of the immediate danger, go on with the remedy he has been taking. In severe cases, if ipecac does not relieve vomiting, go on with Cadmium or what ever remedy may be indicated. During 1878, numbers of people were treated by means of a little treatise, not taking up more than two of these pages, and the employment of the before mentioned remedies. The homœopaths had all they could attend to, and an observing public preferred self treatment, with homœopathic remedies to castor oil and calomel, in the hands of the old school. When I make the assertion that over one-fifth of the entire cases of yellow fever were treated by Dr. Harper, myself and two sons, against twenty-five or thirty doctors of the old school, who treated the balance, the people of the United States will understand that Homœopathy in Vicksburg inspired confidence, and that confidence was brought about by a *comparison of results.*

This was my method of treatment, or rather our treatment, for we Homœopaths have a grand law in common, from which there is no departure. How many cases I actually treated, I do not know, for calls would come in such quick succession that records were not kept. I am positive I have treated 1000 cases (with the help of my two sons) of which I have the recorded names of 781, and a classified recapitulation shows the following:

CASES.

Total whites	334
Total blacks	447
Males	306
Females	390
Unclassified sex	85
Adults	493
Children	288

RESULT.

Whites recovered	287
Blacks recovered	440
Whites died	47
Blacks died	7
Total number of black vomit cases	47
Recoveries in same	17
Deaths in same	30
Deaths from other causes	24

These black vomit cases were genuine, unmistakable ones, and of the total number I have a recorded loss of only 64 per cent. of the cases who were in this desperate condition. I have published this, for the good it will do our school, in placing it in the front rank of medicine, and not for self-interest, as I have no doubt my brother Homœopaths in the great field had equally as great success, compared with the most flattering reports of Allopaths. In closing this treatise, I, as a representative of our school, wish it known that our school courts investigation, in any yellow fever epidemic, cholera or in the results in any class of diseases.

To those who would avail themselves of self-treatment, I would state that the remedies used can be purchased at a trifiing cost in any of the large cities, or from any Homœopathic physician. By a comparison, it will be seen by an intelligent public that self-treatment, Homœopathically, will give far better results then the most accomplished old school doctor can show, with his purgatives, blisters, plasters, quinine, calomel, cupping, leeching, refrigerating process, etc. Let common sense rule, and not hamper nature with drugs which she in vain resists.